

CARD

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**Recognizing Intellectual
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**How to Build Relationships
with the Media**

Smart Card Interoperability

**Unique Partnership Creates
Turnkey Solution for Printing
Cards on HP Indigo Press**

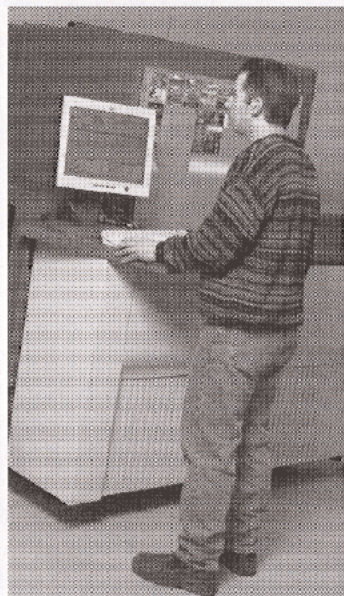
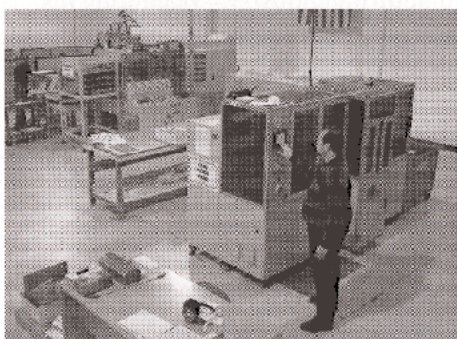
Ask a Busy Person

**Networking: Make the Most
of Industry Conferences**

Unique Partnership Creates Turnkey Solution for Printing Cards on HP Indigo Press

Sandia Imaging Fills Niche for Short-Run, Quick Turnaround Print Jobs

With 10.7 billion wallet-sized cards being manufactured nationwide in 2002, at a growth rate of 10.3% over 2001, it is obvious there is a niche to be filled. The most robust growth can be attributed to non-secure cards like retail gift cards and loyalty cards. But other segments are also growing, such as financial transaction and control-access cards – think hotel room keys – and also season passes. Filling that niche is what Sandia Imaging had in mind when it purchased the IIP Indigo s2000 digital press this year. But it would take more than the latest equipment to break into the market. It would take a unique partnership between several different leaders in their respective fields. And it started with Sandia.



Sandia Imaging, located in Arlington, Texas, provides plastic card lithographic and dye-sublimation for the printing of driver licenses, credit cards, facility passes, membership cards, national I.D. cards, etc. According to Bertrand Pelletier, Sandia's president and COO, "The market is expanding. We wanted to fill the niche for small press runs of 5,000 to 15,000 cards. That small number is of no interest to plastic printers who waste as much in set-up. That's why we bought the HP Indigo press."

Hewlett Packard's Indigo Press Makes Printing Variable Data Possible

In March 2002, Hewlett Packard (Palo Alto, California) bought Indigo from Benny Landa, its inventor, who founded the company 25 years ago. According to Raymond Dickinson, HP product marketing manager, there are over 100 HP s2000 Indigo presses in circulation. That's in addition to the

HP Indigo ws2000 and ws4000 lines. "There was nothing like it before the HP Indigo," he says.

Indeed, the HP Indigo is the first offset-quality full color printing press in existence for printing plastic cards. Instead of toner, it uses special HP ElectroInk® liquid ink in a unique method of ink-based electrophotography. Yet it is Pantone™ certified, achieving 97% of the entire range. Because there are no printing plates to set up, the press achieves quick turnaround on short-run print jobs: 1,000 four-color 11x17/A3 images per hour or up to 12,500 duplex cards per hour. But of particular interest to Sandia is the variable data capability. The IIP Indigo can print versioned data on a wide-variety of substrates, with and without magnetic strips. Says Pelletier, "We can pull data from different database files and print it on a card, which you cannot do with the lithographic offset press because you use the same plates." On each sheet of 21 cards

printed, it's possible for every card to feature a different graphic and contain individual personalized data.

Even so, up until now, the HP Indigo s2000 has mostly been marketed to converters of membrane touch switches, point of purchase signage, and graphic attachments. Though the press has been used to make cards on a limited basis, Pelletier avers, "When Sandia bought it, we were surprised to learn that we needed to coat the cards for proper ink adhesion." Another issue that soon manifested itself was the thickness of the cards. "We needed the press to do a thicker core. Right now, it is limited to 20 mils, and the ISO standard is 30," he says.

But First...Coating and Lamination Issues to Be Overcome

Loren Rapoport, Sandia's product manager, bears this out, "We were a little perplexed to discover the coating and lamination issues. In looking for a solution for materials, I contacted Klöckner Pentaplast." Headquartered in Gordonsville, Virginia, Klöckner Pentaplast produces high-quality rigid vinyl. Tom Mucenski, the company's business manager for credit card films, has 10 years of previous experience in credit card manufacturing – and was well qualified to help. He explains, "The core of the card uses normal rigid vinyl, but the press requires the vinyl to have a special coating for true ink adhesion and quality color registration. We had to find the right coating that had the ability to maintain HP ElectroInk®

color throughout the lamination process. Otherwise, color gets distorted in lamination."

"Another issue with lamination," explains Pelletier, "is using it to build the card to the ISO standard of 30 mils where two pieces of plastic are laminated together. Klöckner Pentaplast was a tremendous help with this." The card is really a four-layer sandwich. The front and back are each 13-1/2 mils using Pentacard® CC-M278/12 blank white vinyl on which the graphics are printed on one side. The outside on both sides is a Pentacard® CC-L278/01 2-mil SB5 coated overlay. Together, the four layers are roughly equivalent to the ISO standard. At lamination, the heat and pressure solidify the layers into a 30-mil card. As with the blank white PVC core front and back,

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the material used for the coated overlay is manufactured by Klöckner Pentaplast. Adds Pelletier, "The card is coated on one side for ink adhesion, but is laminated to another similar sheet in an industry process known as split core construction. When magnetic stripe is added to the overlamine, a financial transaction card is born that meets ISO industry standards. The one-sided coating that Rapoport speaks of is what was needed to make the IIP Indigo process work to produce a high-quality card. But up until this time, no such high quality coating was known. Mucenski took it upon himself to do an extensive study of numerous coatings and laminates in a 60-day period. He wanted to find the best coating solution and

says, after evaluating different sources of coatings, the selection of Tekra's Dura-Go product was an easy choice due to outstanding performance of ink adhesion at the printing press and best performance of any coating through lamination.

Tekra Steps Up to the Plate with the Right Coating

Tekra Corporation is a source for engineered plastic films, adhesive

membrane switches, and ad specialties, such as mouse pads and point of purchase signage.

Andy Danihel is digital film product manager at Tekra. Of the partnership with Klöckner Pentaplast he says, "We combined our knowledge to find the right thin chemical coating that would bind to their rigid film (used in making the cards) and provide excellent ink adhesion."

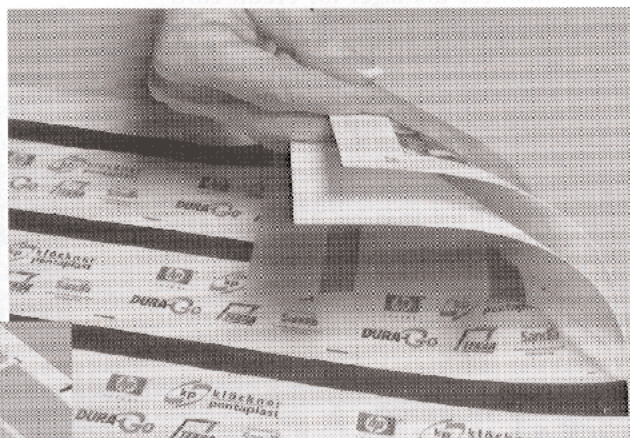
Working with Danihel and others,

Mucenski says that he sampled ten different coatings. There are five areas of testing for coating: run ability; ink transferability; blanket capability; overall ink-to-substrate interaction; and temperature operations windows. Only several passed the print test in which a PVC sheet is put through the printer. Sticky tape is then applied to the graphics and pulled off quickly to check for adhesion to substrate. When lifted off, 80% of the ink had to stay on the sheet as a minimum.

A Co-Branding Partnership is Born

In the end, Dura-Go™ was the Tekra coating that performed best. It was specifically developed for the IIP

products, and advanced hard-coated films. Their coating and converting facility is located in New Berlin, Wisconsin, USA. Besides plastic cards, the company provides materials for printed overlays for nameplates,



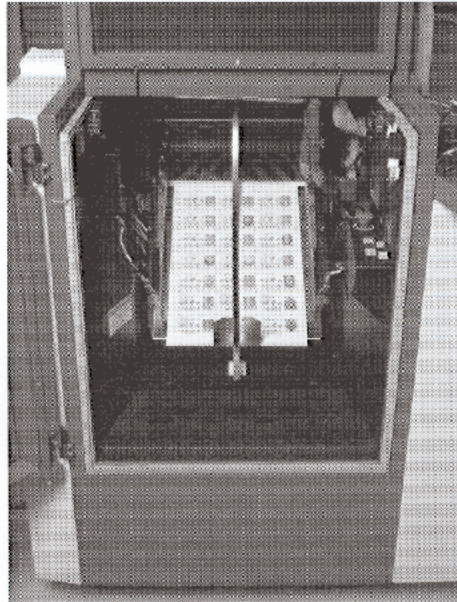
Indigo press. Klöckner Pentaplast and Tekra now plan to co-brand their products together as one – vinyl sheets ready for printing on HP Indigo presses. Both companies are pleased that now there is a turnkey solution for printing cards on the IIP Indigo press. DuraGo™/Pentacard® is the product name.

By way of further explanation, Danihel says that now that the right chemical coating has been identified, Tekra will be coating 55" wide rolls of rigid vinyl from Klöckner Pentaplast on one of their two roll coating machines. Each coating machine has the ability to coat 62" width material and between 1/2 mil to 30 mil thick material. After the liquid coating is applied, it is cured in a chemical process that bonds the coating to the plastic vinyl film. Once completed, Tekra puts the rolls onto one of their sheeting machines and cuts the material down to a trimmed and squared sheet size. The sheets are then sent to Sandia Imaging who had been previously ordering 10,000 sheets at a time.

Finding a Coated Overlay that Doesn't Spread in Lamination

But before Sandia could actually produce cards, Mucenski had more testing ahead of him. He wanted to find the best coated overlay for outside the card in the lamination process. This is the outer layers of the four-layer sandwich, so to speak. It had to be an overlay that would not spread in the lamination process. For this, he tested Klöckner Pentaplast's Pentacard® brand of coated overlay. "The card has to meet 3.5 newton per centimeter (N/cm) as an ISO requirement for laminate adhesion onto coated stock," he explains.

First, he tested overlay with no coating; but it didn't work. He then tested four different water-based overlay coatings, but they did not meet standard. Lastly, he tested two solvent-based (SB) overlay coatings,



and they were winners: SB-5 and SB-6. The SB coatings exceeded 12 newton per centimeter...way over the ISO standard. Says Mucenski, "There's assurance now that the card will not delaminate in the field."

The Bonding Process

When Sandia purchased the IIP Indigo, they also purchased a laminator machine from OEM Press Systems. Once printed, sheets are stacked in groups of ten, called books, and they're placed in the laminator between steel platens that gloss and polish the card product. It's a hot-press laminator like a large oven that also applies pressure. The sheets are heated to the point where all layers of the card bond together at a rate of 250 sheets per hour. After cooking in the laminator, the sheets are put into a cold stack to cool down. In another stage of fabrication, a Sysco die-cutter Sandia purchased from Associated Pacific (California) punches out the cards into trays that are then placed in boxes and sent to quality control before being shipped out. This whole process takes less than one hour.

In all, Mucenski helped set the initial heat transfer-through-materials settings in just one day. Sandia then

made subsequent minor adjustments on the laminator before "hitting it right," as Rapoport says. As a result, Sandia was producing cards within the first months of equipment installation.

Production Doubles per Shift

Rapoport also cites some impressive statistics. Now that Sandia has the right materials in hand, they've gone from ordering 10,000 sheets at a time to 50,000 to 100,000 sheets in one order. On a single shift in one week, Sandia can print, laminate, and die-cut 215,000 cards. Under their previous method, it would take two-and-one-half shifts to achieve the same number. "We've more than doubled production on a shift," Rapoport states. In a run of 19,000 cards, Sandia can print 18 different versions, something that was not remotely possible on the old press. "What would have taken 28 hours to print on the traditional litho press, now takes only one-and-a-half hours on the IIP Indigo," he enthuses. Even with the additional time of tacking, laminating and punching sheets added, this job was still completed in a fraction of the time it would have taken by traditional litho technology. With the right combination of film, coating and overlay, concludes Rapoport, "There is tremendous capability using the Indigo press. It has allowed us to take on more jobs."

Sandia's Pelletier is more phlegmatic about it and adds, "The jury is still out. That's because before, it would take a half-hour to one hour to change the plates on a lithographic offset press to get them right. Then we'd have to wait for a certain quality of card. But on the plus side, the color was heated right at that stage, rather than needing a lamination machine in addition to an Indigo press – and a die-cutter. With a lithographic press, we could do a long press run of 10,000 cards per hour so that we'd catch up from what we lost in prep time. When

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there is an order for half-million credit cards, the quantity justifies all the set-up. With a digital press, there are no plates because the ink is part of the machine. The first card comes out quickly. We can change out cards on the fly. However, we have to print on sheets instead of pre-cut blank cards. And that also means we have to laminate on each side of a double core card."

Pelletier does concede, however, that with the HP Indigo, they can do more runs with quicker turnover. "Ultimately, there is no denying the fact that the advantages of the HP Indigo are personalization. We can go so far as to download photos on each card, which would be unthinkable on an old offset press," he adds.

'Tis the Season to Be Happy

In the end, Pelletier will say that he is happy with the HP Indigo press...and with the help of Hewlett Packard, Klöckner Pentaplast and Tekra Corporation. Sandia will be

better able to keep up with demand now that it has worked out the coating and lamination issues with the short-run Indigo press.

Tom Mucenski at Klöckner Pentaplast is just glad that all card manufacturing issues have been resolved. "For newcomers to the HP Indigo press, there now is a turnkey card solution that among other advantages produces quick changeovers and lower scrap rates. Plus the skill level of the press operator can be much less." He concludes, "For those just entering the card market, the co-branded DuraGo™/Pentacard® coated film developed between Tekra and Klöckner Pentaplast will be a real boon." Indeed, because there was tremendous cooperation between Sandia Imaging, Hewlett Packard, Tekra Corporation, and Klöckner Pentaplast, a turnkey solution for printing cards on the HP Indigo press could break the market wide open. ●