As EMV chip technology becomes the global standard for credit and debit payment cards, issuers must consider its impact on various aspects of the issuance process — including card substrate—and the print technology used to personalize each card. Whether you’re instantly issuing financial cards for the first time, or investing in a new system to prepare for EMV issuance, use this guide to understand best practices and become familiar with typical deployment challenges as you prepare for migration.

**KEY CHALLENGE:**

**Printing Near a Contact Chip.** There are three primary print technologies used for the personalization of cards in instant issuance applications: direct-to-card printing, retransfer printing and embossing. The migration and implementation of EMV chip cards brings new challenges to these long-standing print technologies that must be fully understood to ensure quality card production.

**RECOMMENDATIONS AND BEST PRACTICES:**

**When Using Direct-To-Card Technology:** To ensure quality with direct-to-card printing on EMV chip cards, the entire chip must be recessed at least 1 mil (.001”) minimum below the surface of the card. As this is a more stringent requirement than standard ISO specifications, it is important to work with your card manufacturer or supplier to understand if this requirement can consistently be obtained.

Additionally, due to potential print quality issues and or possible damage to the chip, when or if this specification cannot be maintained, it is recommended that you consider choosing a **lithographic pre-printed cardstock** rather than blank white from your card manufacturer. A lithographic pre-printed card provides a very high-quality and durable finished card at the most affordable price point for personalization supplies.
POTENTIAL PRINT ISSUES DUE TO NON-RECESSED CHIPS WHEN USING DIRECT-TO-CARD TECHNOLOGY

Direct-to-Card, Full Card Printing on Blank White EMV Chip Card

Chip Recessed to Recommended Depth

Chip Not Recessed to Recommended Depth

Direct-to-Card, Printing of Personal Account Number (PAN) on Lithographic Pre-Printed EMV Chip Card

Chip Recessed to Recommended Depth

Chip Not Recessed to Recommended Depth

When Using Embossing Technology: Embossing and indenting provides the traditional look that is associated with a financial card, enhancing the appearance and security of your card. Datacard® embossers allow you to emboss, indent and print high quality color cards. Since this solution also utilizes the direct-to-card printing technology, it’s important to follow the same printing recommendations to ensure a high quality finished card.

When Using Retransfer Technology: When an instant issuance program involves multiple card designs, retransfer printing provides the most flexible personalization solution. Starting with blank white card stock, this technology provides full card, “over-the-edge” color printing. Additionally, since the color imagery is transferred to InTM media, then transferred to the card via heat and pressure, this technology is most suitable for applications when printing over contactless chips, or near and up to the edge of contact chips are required.
KEY CHALLENGE:

Durability & Expected Card Life of Card Personalization Solutions

Card durability and card life are critical elements of EMV card program success. To keep costs down and cardholders happy, you want personalization that can last and reduce reissuance expenses over time.

RECOMMENDATIONS AND BEST PRACTICES:

Use the following chart to aid your print technology decision-making process regarding durability and card life.

<table>
<thead>
<tr>
<th>Configuration and Supplies</th>
<th>Average Card Life Range (yrs)³</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Direct-to-Card (CD820 — Pre-Printed Card, Flat Card Perso)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Monochrome text print, black only (KTT) with 2x T-panel</td>
<td></td>
<td>KTT preferred when using black</td>
</tr>
<tr>
<td>ST-KT (Silver/Topcoat – Black/Topcoat) and GT-KT (Gold/Topcoat – Black/Topcoat)</td>
<td></td>
<td>Option to add silver or gold on the front and black on the back</td>
</tr>
<tr>
<td><strong>Embossing (CE870 — Pre-Printed Card, Embossing)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No printing, Emboss only (PVC card life of 5-year unproven)</td>
<td></td>
<td>Topping foil and indent inks will wear</td>
</tr>
<tr>
<td>Monochrome text print, black (KTT) 2x T-panel</td>
<td></td>
<td>KTT recommended with topping foil and indent</td>
</tr>
<tr>
<td><strong>Retransfer (CR500 — Blank White Card, Full Panel Printing, Flat Card Perso)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full Color panel (YMCKi) print with 2nd layer of InTm</td>
<td></td>
<td>Current field experience with simplex printing only</td>
</tr>
</tbody>
</table>

¹ Assumes typical financial card usage profile – actual conditions can vary greatly by user
OTHER CONSIDERATIONS:

The migration to EMV is also an opportunity to evaluate your overall card issuance process, make necessary changes and consider other factors that drive card program success. Examples of process changes could include:

Card Formats & Card Designs
Existing card designs might have design elements that will need to be altered to accommodate placement of the chip.

Smart Card Options
There are multiple types of smart card chips that are in the market: a six contact plate and an eight contact plate option. These two chips are very different in size and will have a significant impact on your card design.

As you migrate, the experts at Entrust Datacard will be by your side to help answer questions, keep you informed of valuable insights and to help you make the best decisions on what card substrate, print technology and supplies offering fits your program needs to create trusted, long-lasting instantly issued EMV cards.

For more information, contact your sales representative.

www.datacard.com/emv-solutions