

Understanding the Differences Between Direct-to-Card and Retransfer Printing



Introduction

Organizations seeking to produce quality printed cards and IDs will find an array of card printers from which to choose. Understanding that not all print technologies are created equal and grasping the basics of how each type works is essential to selecting the right solution.

This document answers Frequently Asked Questions about DTC[®] (Direct-to-Card[®]) and Reverse Transfer, “Retransfer,” or HDP[®] (High Definition Printing[®]) card printing methods. These questions and answers will identify the main differences between these two printing methods and illustrate the potential advantages of one printing method over another depending on your specific needs and preferences.

1. What is Direct-to-Card (DTC) printing?

Using a Direct-to-Card (DTC) printing method, text and images are printed directly to the surface of the card through heat and pressure. This method is called “Direct-to-Card” printing because the printhead comes into direct contact with the card’s surface during the printing process.

2. What is reverse transfer Printing?

Using a Reverse Transfer printing method, text and images are first printed onto a clear film. Through heat and pressure, the film is then “transferred” or fused to the surface of the card. Unlike Direct-to-Card (DTC) printing methods, the printhead never comes into direct contact with the card surface.

3. Is reverse transfer printing the same thing as “retransfer” printing?

Yes.

4. What is HDP printing?

HID Global’s retransfer printing method is referred to as HDP (High Definition Printing).

5. Is there any difference in the print area of the card when comparing DTC and retransfer/HDP printing methods?

Yes. The total print area of the finished card is slightly smaller with DTC printing than with retransfer printing. DTC printing provides what is referred to as “edge-to-edge” coverage where images and text can be printed just up to the edges of the card. Because there is a slight margin between the

card's edge and the print ribbon, finished cards usually have a slight (but barely visible) blank border at the outer edges.

Conversely, retransfer printers print over the entire card's surface. This is known as "over-the-edge" or "full bleed" coverage. With retransfer/HDP printing, there is no blank border at the outer edges of finished cards as this method provides complete card coverage.

6. What is the difference in print quality and resolution when comparing DTC and retransfer/HDP printing methods?

Retransfer printing allows for more superior quality finished cards as images are typically more vibrant and sharper, and text and barcodes are generally bolder and crisper than with DTC printing. The standard resolution for most DTC printers is 300 dpi (dots per inch), whereas 600 or greater dpi is more readily available on retransfer/HDP printer models.

7. Does the printing method affect printhead wear?

Yes. Because the printhead comes in direct contact with the card surface when using a DTC printing method, printhead wear is more likely and may require printhead replacement over the life of the printer. Having direct contact with the card surface, DTC printheads can accumulate dust or debris which may affect printed card quality and/or cause damage to the printhead.

Conversely, when printing via retransfer/HDP, the printhead never comes in contact with the card surface during printing. As a result, there is little opportunity for the printhead to become damaged or worn. Retransfer/HDP printheads tend to outlast those used for DTC printing. Retransfer printheads are also less likely to incur dust accumulation and/or damage, as they are never in direct contact with the card surface during printing.

8. What are the recommended card types for each printing method? What other factors should be considered when choosing a card type?

DTC Card Compatibility and Card Construction Recommendations

Although all card types (PVC, PVC/PET or Polycarbonate cards) are compatible with DTC printers, PVC or PVC/PET multi-layer construction cards are recommended for cost considerations. One should also consider desired card lifespan when selecting the card construction that will best serve your program's needs:

- PVC cards have a typical lifespan of 1 year and are ideal for shorter-term applications such as gift/loyalty cards, temporary ID/visitor ID, or contractor ID badges.
- PVC/PET multi-layer composite construction cards have a typical lifespan of 3-4 years and are ideal for slightly longer-term applications such as debit/credit financial cards.
- PVC/PET or composite cards improve the card's resistance to UV light, chemicals and general wear-and-tear compared to PVC cards.

Retransfer/HDP Card Compatibility and Card Construction Recommendations

Due to the heat applied during the retransfer printing process, use of PVC-only cards is not recommended, as the retransfer process may cause cards to warp. A more resilient card such as a PVC/PET or Polycarbonate card is recommended for best results. One should also consider

desired card lifespan when selecting the card construction that will best serve your program's needs:

- PVC/PET multi-layer composite construction cards have a typical lifespan of 3-4 years and are ideal for slightly longer-term applications such as debit/credit financial cards.
- PVC/PET or composite cards improve the card's resistance to UV light, chemicals and general wear-and-tear over PVC cards.
- Polycarbonate is more resistant to heat, high humidity and has an expected lifespan of 5 to 10 years, making it an ideal card type for applications such as Driver's Licenses and Corporate Employee/Physical Access badges.
- Polycarbonate cards support laser engraving which creates a permanent, unalterable card.

9. Are cards printed via retransfer/HDP inherently more durable and secure than those printed via Direct-to-Card?

Yes. Barring any additional visual security features and/or overlaminates, retransfer/HDP printed cards are inherently more durable than DTC printed cards because the retransfer film or HDP film that is applied during the printing process acts as a natural and durable barrier between text/images and the outside world. Cards produced by retransfer/ HDP printing solutions are also more secure than other types of cards because they are inherently tamper-evident — if a counterfeiter tries to peel apart the layers (peel the printed film from the card's surface), the image essentially destroys itself rendering the card unusable.

10. What about technology cards with embedded electronics? Is one method recommended over another?

Typically, cards that contain embedded electronics are not recommended for DTC printing. This is because the ridges formed by embedded electronics within the card can affect image quality. What's more, because the printhead comes in direct contact with the card surface, embedded electronics have the potential to damage the DTC printhead.

On the other hand, retransfer/HDP printing is highly recommended for cards that contain embedded chips or antennae for best image quality results. Because the retransfer film is fused to the surface of proximity and/or smart cards, it naturally conforms to ridges and indentations formed by the embedded electronics inside the card. As a result, images and text printed on the card are smooth, crisp and do not suffer irregularities. As an added bonus, the printhead never comes in contact with the uneven card surfaces formed by underlying embedded electronics so there is virtually no potential for printhead damage.

11. What is the difference in price between DTC printers and retransfer printers?

DTC printers are generally less expensive than retransfer/HDP printers. Consumables costs also tend to be lower as no additional film is required when printing directly to the card.

Retransfer/HDP printers are generally more expensive than DTC printers. Additional consumables (retransfer or HDP film) are required which can increase overall cost-per-card.

12. What type of product warranty is offered for DTC printers versus retransfer printers?

Because Direct-to-Card printers print directly to the card's surface, there is a higher potential for damage; therefore, warranties may be more limiting for DTC printers than those for retransfer/ HDP printers. It is recommended that you inquire with your individual provider regarding available product warranties.

13. How do I determine which printing method is best for my card program? What should I take into consideration?

This will depend on your program's needs.

DTC Printing Considerations

DTC printing offers exceptional value when paired with the right organization, card program and physical card type. DTC printers are excellent choices when:

- Initial printer hardware investment is limited
- Cost-per-card is of utmost concern
- Desired card longevity does not exceed 4-5 years
- Limited or no electronics will be embedded within the cards

Retransfer Printing Considerations

Retransfer or HDP printing allows organizations to take advantage of many features not available with DTC printing and are generally best suited for card programs when:

- Higher definition printing is required for very small or complex characters
- Over-the-edge printing is desired
- Card durability and longevity is of utmost concern
- Tamper-evident cards are desired
- Laser engraving / tactile security features will be applied
- Cards will contain embedded electronics (chips and/or antennae)

To learn more about DTC and HDP (Retransfer) Card Printers offered by HID Global, visit us at:

<https://www.hidglobal.com/products/card-printers/fargo>



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