



Application note



Automotive and Aerospace

The best protection for part marking: A multi-layered approach



Regulatory mandates, counterfeit protection, and logistic requirements for addressing potential recalls all demand high-quality codes on manufactured parts. Consumers and producers alike benefit from codes that are clearly legible and traceable. Unique and identifiable codes and markings can help boost consumer confidence while also empowering business and regulatory initiatives for traceability and safety.

The Challenge:

The codes on manufactured parts need to fulfill a variety of different requirements. For producers, they must comply with regulations and need to be traceable for tracking purposes. For consumer confidence and brand protection, codes are paramount in fighting against counterfeiting and defect-related recalls. Within the automotive and aerospace industries, a number of associations have adopted direct part marking standards in order to help meet these requirements. Marking parts with machine-readable codes allows for a part to be tracked throughout the manufacturing process as well as the supply and distribution chain. In a recent Videojet survey,* nearly one-third of respondents in automotive or aerospace production stated that they are currently applying a security code or unique identifier onto their product.

Videojet Advantage:

With in-depth application knowledge and integration expertise, Videojet offers advanced laser marking and continuous inkjet (CIJ) solutions that can provide an unparalleled level of visibility and tracking to your supply chain. These solutions empower you to better fight the costly battle against counterfeiting, aid in recall efforts, and help meet regulatory requirements. With easy-to-use coding solutions by Videojet, you can build a stronger foundation in support of your existing supply chain efforts. Smart, overt, and covert coding enables far greater visibility to better protect your brands and fight costly counterfeiting and recalls of your product.

Multi-layered approach for traceability



Protecting your profitability and your brand

Forward-thinking manufacturers are now also using direct part marking to track high-value parts in order to deter theft or counterfeiting, pinpoint parts for service or recalls, help determine liability, and resolve warranty issues.

Coding and marking technology can provide an advanced level of visibility and tracking to your distribution channel. Smart coding provides optimum visibility to help you protect your brands and your profitability. Overt coding delivers visible, clear, and permanent codes with laser marking systems. In addition, covert coding offers hidden coding that adds additional security and helps protect sensitive information. With this multi-layered approach of smart, overt, and covert coding solutions, coupled with tracking and auditing mechanisms, it is more difficult for others to make counterfeit parts. They also make it easier to track down parts in case of a recall.



SMART OVERT COVERT

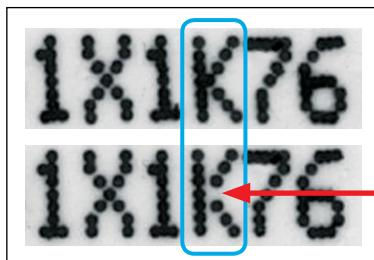
Type	Description	Coding Technology
Smart coding	Altering or verifying certain data	CIJ and Laser
Overt coding	Permanent codes	Laser
Covert coding	Concealed information	CIJ and Laser

Smart coding

Preventing counterfeiting is challenging. Participants in gray and black markets will often take drastic measures in order to reproduce or resell your products for a profit. However, smart coding can help make it easier for authorized vendors to guarantee the authenticity of your product. Smart coding takes a basic lot or batch code further by altering and verifying specific characters in the code, making it more difficult for unauthorized parties to copy. Smart codes are difficult to emulate by unintended third parties and are an important foundation to an effective counterfeit prevention system. When utilized correctly, they can provide greater visibility into your supply and distribution chain and help reduce your liability in the event of counterfeiting.

Below are a few ways that smart coding can add more security to the lot or batch codes you already print today:

- Self-verifying codes: Codes following a pre-determined rule or pattern such as the digits adding up to a specific number or certain digits being multiples of one another
- Interleaved marking: Two or more selected characters within an alphanumeric code that partially overlap
- Dynamically altered font: Software generated codes with small segments of different letters or numbers missing to create unique codes on each product
- Verifiable code: Codes created by unique software-driven algorithms that can be scanned and tracked with vision systems throughout the supply chain



Smart coding: Dynamically altered font

Overt coding

Overt, visible codes created by laser marking systems are an important layer of defense against counterfeiting and diversion, and an effective means of supporting the integrity of your products. Since a laser beam changes the substrate, the laser code cannot be taken off without destroying the product's surface. Therefore, the code is nearly impossible to remove without changing the appearance of the product and/or packaging, making it an unattractive target for unauthorized parties. Overt codes, which are permanent, high-quality, and visible, instill brand confidence and hinder code removal.

Laser codes are an ideal overt coding solution for part marking providing:

- Permanent codes that are extremely difficult for unauthorized channels to remove
- High-quality marks that help enable clear smart coding techniques and instill brand confidence with customers
- Additional text, logos, bar codes, graphics and other information can be added to enhance protection



Overt coding: Permanent code

Covert coding

There are two ways to utilize covert coding. One is by utilizing invisible inks with CIJ printers, and the other is by utilizing DataMatrix codes (which can be created using either CIJ or laser technology).

Ultraviolet (UV) and infrared (IR) inks

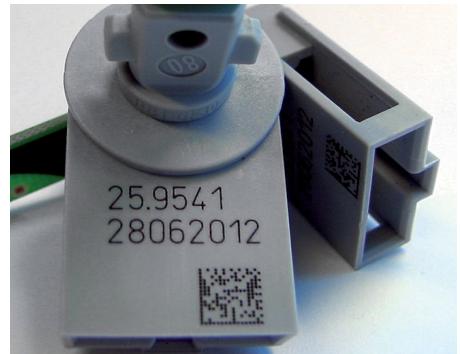


An unobtrusive solution for coding and tracking products through the supply and distribution chain, invisible fluorescing inks create discrete fluorescing codes and brand information that are only visible under UV or other high frequency lighting. UV and IR ink codes can be printed with CIJ printers and are easy for channel partners to read with available vision technologies.

DataMatrix or 2D coding

DataMatrix codes are two-dimensional bar codes consisting of black and white cells arranged in a square which can be encoded with text or numeric data. These codes provide a powerful brand protection tool because they can store important supply chain and production information. When added to the package, DataMatrix codes allow for additional information about each product to be tracked at each stage of production and distribution. DataMatrix codes are able to contain more information in less space than traditional alphanumeric codes.

Covert coding is concealed from consumers, but visible to distribution channel partners with specialized readers.



The Bottom Line

To help protect your products, you can code them with high-quality alphanumeric text, 2D codes, logos, and more. As industry leaders, Videojet understands the value and importance of protecting your products, as well as the need for advanced coding and marking systems. That is why we offer a wide portfolio of laser and CIJ systems that can address your marking, security, and traceability needs. We have the expertise needed to help you identify and integrate the ideal solution based on your application.

Ask your Videojet representative for more information about our laser and continuous inkjet coding and marking solutions.

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