



# Your Identity is Secure with Us

Holographic and Printed  
Security Features



*Document*  
**Security** *Differentiated*  
*Holography*  
*Overt* **Trusted**  
*Forensic*  
*Laminates* *Print*  
*Authentication*  
**Experts** *Global* *Covert*  
*Innovative*  
*Reliable*



# Document Security Begins with Expert Design

Beyond being attractive and displaying important personal details, identity documents must address the unique authentication needs of disparate users - border guards, government institutions, banks, retail establishments, etc. In most cases, a combination of overt, covert, and forensic security features is required for simple verification as well as more complex validation using simple to highly complex technical tools. The development and integration of these features into a document's design requires skillful planning to deliver a meaningful, cohesive, and effective security document. This is where we shine.

## Document Security Experts

ITW Specialty Films' document security experts are highly skilled in ascertaining document security threats, identifying material and technology weaknesses, and developing innovative solutions to safeguard against counterfeiting and alteration. Technologically, we offer the industry's broadest range of holographic and printed security features for the protection and authentication of government and personal ID documents, including passports, national IDs, driving licenses, healthcare and voting cards, birth and marriage certificates, and many other forms of identification.

## Innovation and Development

As an independently operated division of Illinois Tool Works Inc. (ITW), a Fortune 200 company, we have the financial resources necessary to continually invest in new technology, research, and development.

## Reputation for Excellence

Our ITW brands have developed a global reputation for producing some of the industry's most advanced security solutions with overt, covert, and forensic security features. Integrating the technologies of these brands enables us to offer our clients custom solutions with a highly differentiated set of security features incorporating holographic and non-holographic optical devices, and proprietary print and coating technologies. The resulting product offering includes some of the industry's most secure features designed to prevent counterfeiting and aid the authentication of genuine documents.


## Solutions for Every Substrate

Whether the project involves paper, PVC, polycarbonate (PC), synthetic paper, or one of many other available substrates, we produce holographic and printed security features that can be incorporated into the document to ensure its security and reliable authentication.

## Using this Guide

This brochure provides an initial outline for your document security project. While it is by no means a comprehensive guide, it should provide you with a good basis for identifying the security elements you would like to include in your document program. Of course, we are available to assist you at any stage in the process.

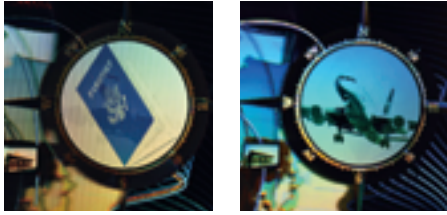
# Level 1 Overt Features

A woman with short brown hair, wearing a blue blazer over a white shirt, is holding a dark blue passport. She is looking towards the camera with a slight smile. In the background, a man in a white shirt is partially visible, looking down. The overall scene is brightly lit, suggesting an indoor setting like an airport or a travel agency.

Easily seen by the naked eye, overt features—consisting of images, lines, and/or text—provide a quick means of visual authentication.

# Holographic Features

## 2 or 3-Channel (Switch) Effect



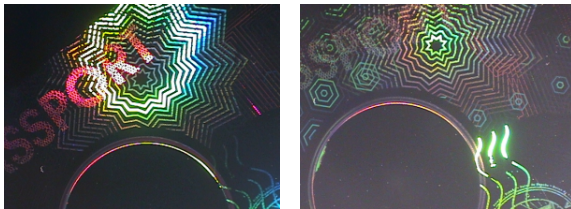
Two or more distinct images can occupy the same area of a hologram, shifting from one to the other when viewed at different angles. This highly-valued feature enables the viewer to authenticate the image by observing the switching images in a defined area.

## 2D/3D Multi-Plane Effect



2D/3D multi-plane images, lines, and text are composed of elements that exist on different planes (surface plane, above the surface plane, and below the surface plane), exhibiting a sense of depth and parallax. Used in combination with dot matrix elements, this feature provides a powerful barrier to counterfeiting because the ability to combine these two types of images requires a very high level of skill.

## Morphing Geometric Shapes



Geometric Shapes that morph and change color as they are rotated within a holographic image. The feature uses rainbow coloring and allows the color to radiate or morph through a specific area. A visually powerful feature used to enhance overall image design.

## 3D Stereogram



The 3D stereogram is an optical illusion of depth and movement created from one or more flat, two-dimensional images or three-dimensional models. Stereograms require intricate design to perform well in a hologram, though, if successful, provide a significant barrier to counterfeiting and a visually powerful authentication device.

## 90° Switch Effect



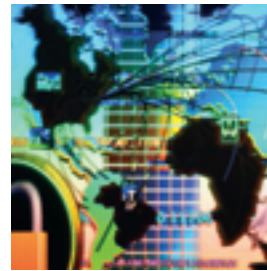
Normal View



Rotated 90°

90° switch effect text and imagery is invisible when viewed at a normal position and clearly visible when viewed at a 90° angle.

## 90° Viewable Element



Normal View



Rotated 90°

This text and/or imagery is faintly viewable at a normal position and clearly visible when viewed at a 90° angle.

## Achrogram



Achrograms are colorless images with positive and negative components that swap when viewed at a 90° angle. Colorless images are not easy to replicate or simulate on standard commercially available origination equipment.

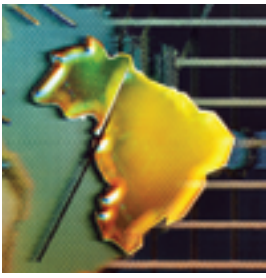
## Achromatic Image



Composed of neutral grays, white, or black, achromatic images, lines, and text have no color refraction. When placed within a highly diffractive image, this non-diffractive element is easily located and verified by the trained eye. Very few originators are capable of creating achromatic elements, making them extremely difficult to counterfeit.

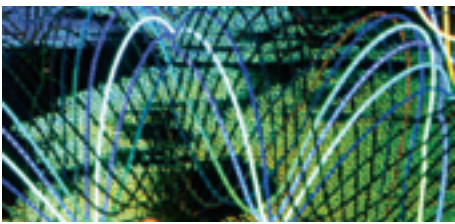


## Embossed Effect



A highly diffractive, surface-oriented grating can be applied to images, text or lines in a hologram, generating the optical illusion of relief or embossing. This highly sophisticated feature is easy to verify, difficult to replicate, and highly effective when applied to national symbols and other well-known images.

## Fine Line Guilloche Patterns



Fine line guilloche patterns, common in banknotes, comprise a series of high resolution lines, curves, rosettes, or a combination of these elements generated by highly sophisticated software. Each element can be assigned a predetermined color shift, creating the illusion of synchronous animation. Such designs are impossible to replicate without the original software.

## High Resolution Lines with Kinetic Effect



High resolution lines with kinetic effect are fine lines that light up sequentially when viewed at different angles, generating the appearance of movement.

## Letter Lens Effect



Created to resemble characters viewed under a magnifying lens, these letters appear and move when viewed under a point light source.

## Matte Finish



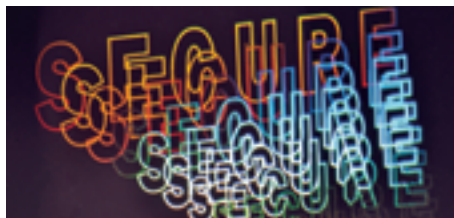
An excellent contrast to the surrounding, colorful holography, the semi-opaque, non-diffractive matte finish is easy to identify and authenticate. Its appearance remains unchanged, regardless of the viewing angle.

## True Coloring



Images refract their true colors only when viewed at a very specific angle. Holograms, which refract the seven colors of the spectrum (red, orange, yellow, green, blue, indigo, and violet), can be used to display the true colors of an image, such as a national flag (it is not possible to specify Pantone colors). As the viewing angle is tilted, the colors sequence through the color spectrum, making this an easily authenticated device.

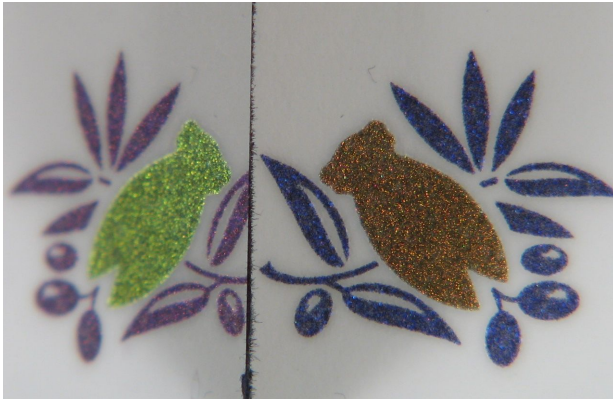
## Wireframing



Created with highly complex security print software, wireframed (outlined) words and objects can be combined with other effects to create more complex images.

# Printed Features

## Optically Variable Ink



Printed ink feature where the color changes depending upon the document holders viewing angle (for example, switching from green to gold). Quick and easy to verify Level 1 feature typically added to identification documents requiring a greater level of security.

## Mica Ink



Printed ink features with a metallic and glossy effect available in a range of colors. A simple Level 1 quick and easy to verify feature that can be combined with a holographic design to increase complexity. Mica ink features can also be combined with UV fluorescence to reveal a Level 2 covert feature with the help of a UV light source.

# Level 2 Covert Features

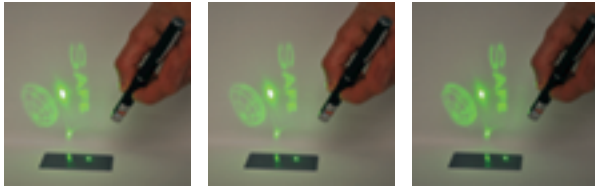


Invisible to the naked eye, covert features require the use of a simple tool—magnifying glass, flashlight, UV light, IR light, or laser pen—to be verified.



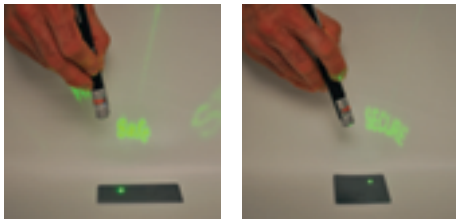
# Holographic Features

## Animated CLR



Multiple images are slightly and sequentially rotated, giving the appearance of animation when holding an ID document stationary and moving a laser across the CLR.

## Dual Axis CLR



While similar to the Single Axis CLR, the Dual Axis CLR projects two different images at 90° angles from one another. Because it's more complex and difficult to create than the Single Axis CLR, the Dual Axis CLR is considered more secure. Yet, with both images occupying the same space within the hologram, the projected images may appear a little less bright in the Dual Axis CLR. We recommend using a hand held reader with an integral screen for viewing this feature.

## Micro Imagery



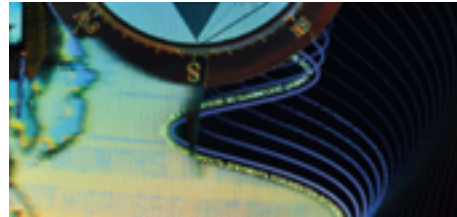
Enlarged Image



Actual Size

True color micro images or photographs, as small as three square millimeters, require the use of a loupe or magnifying glass to authenticate.

## Micro Text



Diffraction or non-diffraction micro text, that can be as small as 175 microns high, is clearly viewed only with an eye loupe or magnifying glass with 10x to 20x magnification. ITW Security Division's origination equipment is capable of producing perfectly formed text that is far beyond the capability of standard, commercially available holographic equipment.

## Single Axis CLR

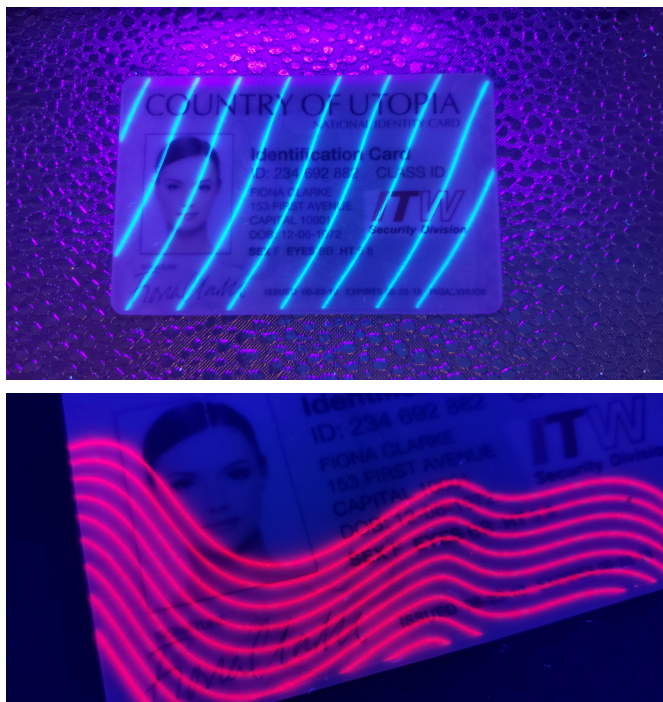


Covert Laser Retrieval (CLR) images and characters, which are invisible to the human eye, can be viewed only by illuminating the coded area with a laser device and looking at the refracted light projected onto a screen made of paper held at right angles to the hologram; or with a special, hand-held laser reader with an integral screen. This is an excellent covert feature, but does require the use of additional equipment for interrogation.



# Printed Features

## Invisible Fluorescent Ink



An invisible text or images, invisible in natural light but visible with the help of a UV light source (short 254µm or long 365µm). Invisible printed features are often used to enhance the security of a holographic design due to its hidden nature



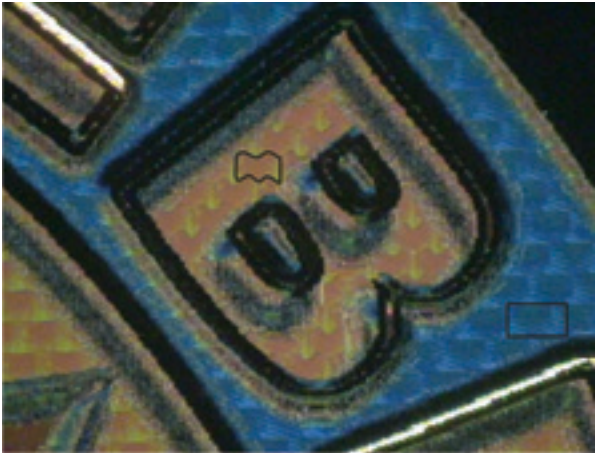


# Level 3 Forensic Features

Discernable only with complex laboratory equipment, forensic features require a high level of skill and expertise to authenticate. They are the ultimate tool for identifying counterfeit documents.

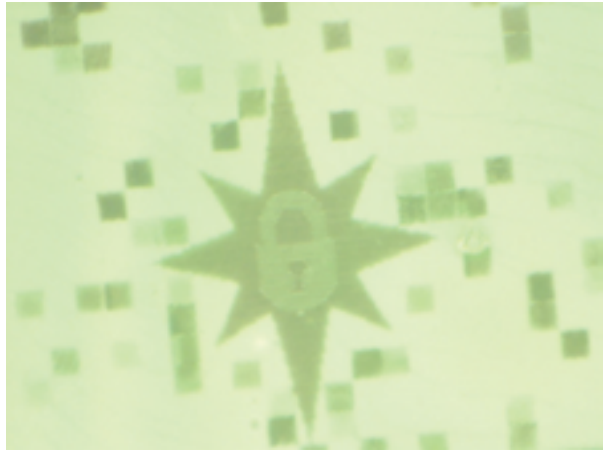
# Holographic Features

## Brick Matrix Manipulation



Brick Matrix is a Covid holographic origination technique. We deliberately manipulate the brick optical structures in predefined and undisclosed areas of a hologram, generating unique fingerprints that can be used to positively verify a document's authenticity.

## Nano Imagery



Nano imagery provides excellent clarity and definition when viewed under a highly sophisticated, high-powered microscope.

## Nano Text



Viewable only through a high-powered microscope, 40 to 175 micron nano text can be diffractive or non-diffractive.



# Security Feature Pricing Categories

Security Feature		Page	Price Category			
			Tier 1	Tier 2	Tier 3	Tier 4
Level 1 (Overt)						
Holographic	2 or 3-Channel (Switch) Effect	3		●		
	2D/3D Multi-Plane Effect	3	●			
	3D Stereogram	3				●
	90° Switch Effect	3				●
	90° Viewable Element	3		●		
	Achrogram	3		●		
	Achromatic Image	3			●	
	Embossed Effect	4		●		
	Fine Line Guilloche Patterns	4	●			
	High Resolution Lines with Kinetic Effect	4	●			
	Letter Lens Effect	4				●
	Matte Finish	4	●			
	True Coloring	4		●		
	Wireframing	4	●			
Printed	OVI	5			●	
	Mica Ink	5	●			
Level 2 (Covert)						
Holographic	Animated CLR	7				●
	Dual Axis CLR	7		●		
	Micro Imagery	7			●	
	Micro Text	7		●		
	Single Axis CLR	7		●		
Printed	Invisible Fluorescent Ink	8	●			
Level 3 (Forensic)						
Holographic	Brick Matrix Manipulation	10			●	
	Nano Imagery	10				●
	Nano Text	10			●	



# Design Studio Capabilities

When designing an effective security device, there are many issues to consider. The experts at ITW Security Division are here to help you assess your needs and develop a solution that best achieves your goals.

## Risk Analysis

The first step in determining the appropriate document security level is to conduct a risk analysis. It is important to understand the types of threats the security features must protect against. Are you at risk from the casual counterfeiter, the professional counterfeiter, or, in the extreme case, state-sponsored counterfeiting or terrorism? Even if you do not know exactly how your security may be compromised, we can advise you on an appropriate means to gather the information. Based on your response, we will provide you with an expert opinion.

## Design with Authentication in Mind

The second step in determining the necessary level of security is to develop a full understanding of how the document will be inspected and authenticated. The general public typically accepts the physical presence of a visual or tactile security feature as proof of authenticity. But if further authentication beyond the general public is required, you should consider the tools that may be on hand and the level of training that may be available. If your security device has the potential to be used as evidence in a court of law, it is advisable to use several forensic features that can be validated by an expert witness.

## Security through Complexity

The greater the complexity of the holographic origination or security print devices, the more difficult the end result will be to simulate or duplicate. At ITW Specialty Films, we are able to combine a variety of originations processes - brick matrix, dot matrix, e-beam, and traditional table - into a single origination, using our proprietary optical micro-grafting (OMG) technique. We can add printed features as well to create some of the most secure, counterfeit-resistant document solutions available today.



## Exclusive Technology

We employ an origination technology that is available only to members of the International Hologram Manufacturers Association (IHMA) and not available for purchase on the open market. The system is capable of originating a wide range of features which otherwise would need to be produced as separate items, created using multiple holographic techniques. A distinct advantage of our origination system is the ability to create and combine Level 1, 2, and 3 security features into a single image. This cannot be accomplished with commercially available systems. The complexity and sophistication of images we produce far exceeds the reproduction and simulation capabilities of potential counterfeiters.

## Custom Security Designs

All document security solutions start with a basic artistic design. Whether you are starting with no design idea, a basic concept, or a completed design, our art department will work with you to create a custom design that integrates with the document's background artwork and personalized data. The end result will be a cohesive design that is attractive, unique, easy to authenticate, and highly secure.

## Your Artwork Files

Keep in mind that security features are high-resolution devices. Therefore, if you are providing artwork, it is advisable to obtain art that has a resolution between 500 dpi and 20,000 dpi. Vector-based files will, in most cases, provide the best results.

## Getting Started

To begin your design project, contact one of our security experts. We will help you determine the level of support you need and create a plan for developing the security solution—holographic and/or printed security laminate, PC security layer, or hot stamp hologram—that best satisfies your needs.







# Secure Facilities

At ITW Specialty Films, we understand that the foundation for secure materials starts with highly secure manufacturing sites where materials are tightly controlled. We manufacture products from start to finish in one of our secure facilities, enabling us to satisfy the “under-one-roof” production requirement stipulated by many government tenders. To further our commitment to manufacturing facility security, our operations are independently audited yearly against the industry’s most stringent physical security standards and regularly audited by our government customers.

## Certifications and Memberships

Between the our facilities in, New Jersey and Essex we are members of some of the industry’s most important organizations and have achieved highly revered certifications and/or compliance with others.



