New Security Features for New Security Challenges
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Corinne Murcia Giudicelli, Group Director Sales & Marketing

H O L O G R A M . I N D U S T R I E S
Innovative Optical Security Solutions
HOLOGRAM. INDUSTRIES GROUP

- Worldwide leader in multi-technologies dedicated to anti-counterfeiting solutions
- Established in 1984 in France
- Turnover 2009: 28,3 M€ (40M$), listed, 270 persons
- Delivering the best anti-counterfeiting and anti-piracy solutions for:
  - ID documents for People and Vehicle
  - Security Labels for products
  - Fiduciary documents
  - Digital contents
HOLOGRAM. INDUSTRIES GROUP
A world leader in anti-counterfeiting technologies

VISUAL SECURITY

DIGITAL SECURITY

FIDUCIARY DOCUMENTS
BRAND PROTECTION
ID DOCUMENTS
DIGITAL CONTENTS
INNOVATION, QUALITY AND SECURITY

- **Innovation as a strategic driver**
  - 10% of the revenue dedicated to R&D
  - Optical and Chemical laboratories
  - System engineering

- **A certified & secure production site**
  - European Central Bank
  - CWA / Intergraf: High security hologram manufacturer

- **Technology leader**
  - Micro and nano optical sciences
  - Material and adhesives sciences
  - Software and computer sciences
INTERNATIONAL REFERENCES

Governments

■ Fiduciary
  ■ Euro, African countries, Brazil, Thailand, Lebanon …

■ Passport, Visa
  ■ Argentina, Belgium, Bangladesh, Bolivia, Brazil, Egypt, France, Georgia, Hungary, Indonesia, Kenya, Latvia, Lithuania, Philippines, Poland, Romania, Saudi Arabia, Senegal, Serbia, Slovakia, Sweden, Turkey …

■ ID Card, Driver license, Registration card
  ■ Angola, British Columbia, France, Portugal, Canada, El Salvador, Ivory Coast, Guatemala, Korea, Morocco, Qatar, Romania, Sudan, Taiwan, Tunisia …

■ Web investigation
  ■ France
NEW SECURITY CHALLENGES

- **Increased counterfeiting threat**
  - Attacks take many forms, at the borders:
    - Illegal immigration
    - Terrorism
  - Companies, banks, insurances… are also confronted to growing threats:
    - Identity thefts
    - Opening of illegal accounts

- **Rising Cyber Crime**

  Internet is a new playing field for individual or organized crime

Documents security is critical to protect citizens, and prevent from serious financial and legal consequences
VISUAL SECURITY
A key feature: DOVID

- Key in visual authentication of the document
  - Easy visual control
  - High resistance to counterfeiting

- Key in protecting the personalized data
  - Any attempt to modify the data is visible
  - Tamper proof film

Hologram, Authentication & Protection are interlocked
EVOLUTION OF VISUAL SECURITY FEATURES
An ever increasing security

- 3rd generation
  - Color control
    - Color permutation
    - Achromatic

- 2nd generation
  - Animation control
    - 2D animated hologram
    - Rainbow images
    - High definition

- 1st generation
  - Relief control
    - 3D hologram
    - Rainbow images
HIGH DEFINITION OPTICAL IMAGE

Alphagram®

- Animated elements & advantages:
  - A continuous animation when tilted up/down
  - Morphing
    - When the optical image is tilted left/right, one image is transformed to the other in a continuous motion
  - Very bright and high definition image
  - Achromatic, positive/negative control based on a complex micro-structure

Metallized Alphagram®

- Combining metal and transparent areas
  - Specific design highly recognizable
  - High brightness
  - High bonding to the substrate
  - Resistant to harsh climatic environment
STATE OF THE ART
DID® Zero Order technology

Specifications and advantages:

- Image in two diffractive colors visible at direct reflection angle
  - Spectacular 2 colors permutation when rotating 90°
  - Excellent visibility in diffuse light
- Simple and easy to memorize and communicate
- Impossible to copy with inks, metal varnishes, liquid crystals…
- Impossible to copy with the traditional holographic techniques
COMBINATION OF SECURITY
Demetallization: a chemical technology

- Combined with transparent Alphagram® and DID®
  - Very bright metallized elements
  - Micro texts or micro lines

- Additional security
  - Combination with a non optical technology
  - Simple visual effect
  - High resistance to counterfeiting
  - Security element used for banknotes
SECOND LEVEL SECURITY

- Thread counter
  - No pixel
  - Micro text (125 µm)

- Laser reader
  - Holographic projection of a micro design

- Scramblegraph® reader
  - Coded image (Moiré)

- Polarizing filter
  - Polarigraph®
THIRD LEVEL SECURITY

- Nanograph®
  - Nano text (20 µm)
  - Nano image (line thickness = 4µm)
- Taggants
TAMPER EVIDENT FILM
Tamper evidence features

- **Foil resistance against fraudulent attacks: scratching or chemical attempts**
  - The optical image immediately reveals any attempt to modify the data by scratching or chemical attacks
  - The optical effect disappears at the point of attack
PRINCIPLES OF ID DOCUMENT PROTECTION

- **Protection of the data by optical laminate**
  - Data are printed on the surface of the document
  - Data are protected by a tamper evident optical film

- **Embedded data in polycarbonate**
  - Data are engraved under the surface of the document
  - The document is authenticated by an optical element
PASSPORT SECURITY

Substrates

- Data page: two main substrates
  - Paper
    - Personalization
      - Inkjet printing
      - Reverse laser printing
    - Hologram
      - Full face laminate
  - Polycarbonate
    - Personalization
      - Laser engraving (black / white)
    - Hologram
      - Embedded patch
PASSPORT SECURITY
For Paper Data Page

- A hot sealable transparent overlay for direct and reverse printing personalization system, in-line or modular
  - Alphagram®, DID®, demetallization
  - Whole page protection with an ultra-thin tamper evident laminate
  - Provided in rolls or sheets
  - Very high brightness and definition
  - Tracking (Laminate numbering system)
  - Tested on application machines from major manufacturers
  - ICAO compliant
PASSPORT SECURITY
For Polycarbonate Data Page

- An embedded hologram for laser engraving personalization system
  - Transparent HRI or DID® hologram
  - Very high brightness and definition
  - Provided in rolls or embedded in our factory
  - ICAO compliant
HIGH PERFORMANCE LAMINATOR : HILAM®

Principle of traditional roll lamination

- **Small roll diameter:**
  - Small effective contact zone
  - Lower lamination efficiency

- **Insufficient roll pressure:**
  - Not optimal heat transfer
  - Not optimal lamination…

- **High roll speed:**
  - Not enough long contact for a good bonding

A roll laminator cannot achieve good bonding and high productivity
HIGH PERFORMANCE LAMINATOR : HILAM®

Principle of innovative press

- Pressure applied on the whole page surface (∼ to 7 kg/cm²)
- All the page surface processed at the same time:
  - Shorter lamination time
  - No marking of the lamination roll

A press laminator geometry is the optimal solution for a perfect lamination with a high productivity demand
HILAM® INNOVATIVE PASSPORT LAMINATOR
VISA SECURITY
Patch solution

- For authentication
  - Same principle as Schengen’s Visa DOVID
  - Higher security level:
    - DID® technology offer a simple effect for immediate and easy authentication
    - Transparent areas prevent cutting and reuse on a fake Visa
    - Combination of technologies:
      - Alphagram®
      - DID®
      - Demetallization
VISA SECURITY
Full surface solution : VISA TOP™

- Full solution set on a unique paper carrier:
  - The printed Visa label
  - The Visa Top laminate

- For authentication and data protection
  - Authentication
    - DID®: advanced optical effect
  - Data protection
    - The whole Visa is protected
    - Ultra-thin laminate
    - Tamper evident
VISA SECURITY

Full surface solution: VISA TOP™

- High effective Cost/Security ratio:
  - Personalization with a standard inkjet or color laser printer
  - Standard laminator: OPTOSEAL® Visa Top is folded into two parts and heat laminated
CARD SECURITY
A new visual security concept

- Personalized colour volume holograms
  - Concept:
    - Holographic photography of the document holder is fully integrated in the security optical image laminate
    - Data are fully interlinked with the optical security elements
    - Optical security to protect all printed data
  - Technologies:
    - Volume holography
    - Pioneered in the late 90’s by Günther Dausmann team, the concept is used on the German ID and passports

Hologram. Industries Research has developed a new technology for volume hologram personalization, the HoloID® unique performance
HoloID®: A NEW VISUAL SECURITY CONCEPT
Volume hologram for ID documents

- A personalized hologram
  - Photographic definition of the image

- Very high brightness
  - Far higher than embossed (HRI) holograms
  - Efficiency > 90%

- Does not affect at all the readability of the printed data

- New optical security elements
  - Colored animations
  - Very effective 3D image elements
  - Possible selection of the colors
Card layers:
- Protective anti-abrasion varnish (10 to 15 µ) or polyester layer
- Photopolymer holographic film (10 microns)
- Swelling and adhesive layer (around 10µ)
- Card body (PC, PET,..) integrating the chip

Full information redundancy
- Holographic information
- Printed data
- Electronic data
CARD SECURITY
Solution for Dye Sublimation

- **Substrate**
  - Polyester with PVC overlay (Melinex)
  - Composite cards (polycarbonate and polyester combination)

- **Security Foil**
  - Full face and Patch laminate, 8 to 12µm
  - Very resistant to abrasion
  - Available in reels or sheets
  - Alphagram®, DID®, Demetallization,

- **HoloID®**
  - Full face laminate
  - Provided in reels
  - Holographic photo fully integrated in the security optical image laminate: impossible to falsify
CARD SECURITY
Solution for Laser Engraving

- **Substrate**
  - Polycarbonate

- **Patch Embedded**
  - DID® color effect and brightness is not altered once embedded
  - Protection feature included by integrating a ghost image in the hologram
  - Best resistance to heat

- **HoloID®**
  - Full face laminate
  - Provided in reels
  - Holographic photo fully integrated in the security optical image laminate: impossible to falsify
DIGITAL SECURITY

GLOBALCHECKER®

- Automatic control of ID documents authenticity by detection of fraudulent attacks

- Applicable to:
  - Passports, Visas
  - ID Cards
  - Driver licenses...

- Detection of fraudulent operations
  - Tampering of the variable data, photography
  - Falsification of stolen blank documents
  - Fake documents, imitations
  - Photocopies

Fake Document
Control of document authenticity

- A digital fingerprint of the original document is acquired and stored in a centralized database at the issuing center.
- At control point, the controller scans the suspect document and the country code written on the document.
- A digital fingerprint of the holder’s document is calculated and compared to the fingerprint stored in the central database.
DIGITAL SECURITY
GLOBALCHECKER®

- Reliable: detects all fraudulent attacks while being tolerant to minor changes due to normal use

- High security:
  - No personalized information stored in the database
  - Data transfer encrypted

- Give response on the document authenticity
Internet is a new playing field for individual or organized crime

- Identity theft
- Grey/black market for illicit or counterfeited products
- Terrorism
- Racial hatred
- Child pornography

Internet is a multi-facet universe

- Referenced or non referenced web
- Peer-to-Peer
- Newsgroups, blogs, auction sites…
CONCEPT

Are there illegal or illicit contents: videos, text or audio message, photo, distributed on the Internet?

AdvestiSEARCH® can help you:
- Exploring the Net
- Using copyrighted fingerprinting technology to automatically detect infringements
  - Take a fingerprint of the original document
  - Identify suspect content on the Internet
  - Calculate the suspect fingerprint and compare it to the original fingerprint
- Analyzing the infringements and assisting in taking actions:
  - Legal response preparation
  - Producing Web Reports
DIGITAL SECURITY
ADVESTISEARCH®

- **Zoom on an incident**
  - Content comparison
    - Full content (image or text) can be identified but also part of it, embedded in another content
  - Additional information
    - URL cache and source
    - Date of online availability
    - Whois cache and source
    - Number of views
    - Date of incident
Thank you for your attention!