

OPTAGLIO®

OPTICAL MICROSTRUCTURE TECHNOLOGIES

MAKING YOUR

POLYCARBONATE

CARDS

COUNTERFEIT

PROOF



IN 2016
OPTAGLIO
DELIVERED
SECURITY
HOLOGRAMS
FOR 30 MILLION
POLYCARBONATE
ID CARDS AND
PASSPORTS.

ABOUT OPTAGLIO

OPTAGLIO is a leading global provider of advanced optical security devices and the market leader in e-beam lithography. During 25 years of our history, we have delivered hundreds of millions of holograms to governments, financial institutions and other organizations in more than 50 countries around the world. Our unique technology has been broadly recognized as the industry standard for optical security.

OPTAGLIO, certified to relevant international standards, operates under strict 24/7 security supervision. Our comprehensive security system covers people, processes, data, and facilities. The company is a member of International Hologram Manufacturers Association (IHMA) through which it registers all its security devices and holograms in the central security register, in London. OPTAGLIO technologies have been used for protection of hundreds of millions of paper-based documents including banknotes, stamps, revenue stamps, certificates, coupons, and securities. We are a proven partner of those who wants to keep their technological advantage and make sure that any falsifying attempt is just wasting time and resources.

ABOUT OUR TECHNOLOGY

e-beam lithography is the most advanced technology for creating optical security elements. Optical holographic structures are generated through sophisticated mathematic algorithms which can be brought together neither through reverse engineering nor any other method. Therefore no unauthorized person can produce the same hologram.

Thanks to the unrivaled mastering of e-beam lithography, we produce holograms with visual effects that cannot be imitated in a comparable quality.

Illusions of gleaming 3D reliefs with changing colors, emerging objects invisible under normal lighting as well as objects optimized for viewing under low light conditions are on the list. Our graphical tools also include animations, fluent moving of objects in different directions, emerging QR codes, bright colors, a dim and a gleaming surface of illusionary objects and many other items.

OPTAGLIO TECHNOLOGY

POLYCARBONATE CARD BEST FRIEND

Producers of polycarbonate ID cards and passports with counterfeit protection as a mission critical issue often face several technical challenges. How to ensure absolute inseparability of the hologram from a card? How to ensure sufficient durability? And what about optical quality requirements?

OPTAGLIO works with unique patented technologies based on specific features of polycarbonate. OPTAGLIO's clients are thus enabled to produce cards as single homogenous units with hologram inside.

ORDINARY HOT STAMPING

Heterogeneous adhesive application

Hologram removal is very difficult

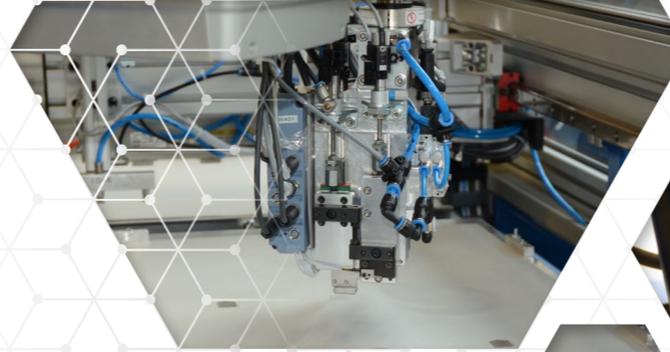
Flawless performance of sophisticated application and production process required

ADVANCED OPTAGLIO TECHNOLOGY

Fully homogeneous polycarbonate unit

Hologram removal is impossible

Easy processing and card lamination





IDENTIFYING DOCUMENTS

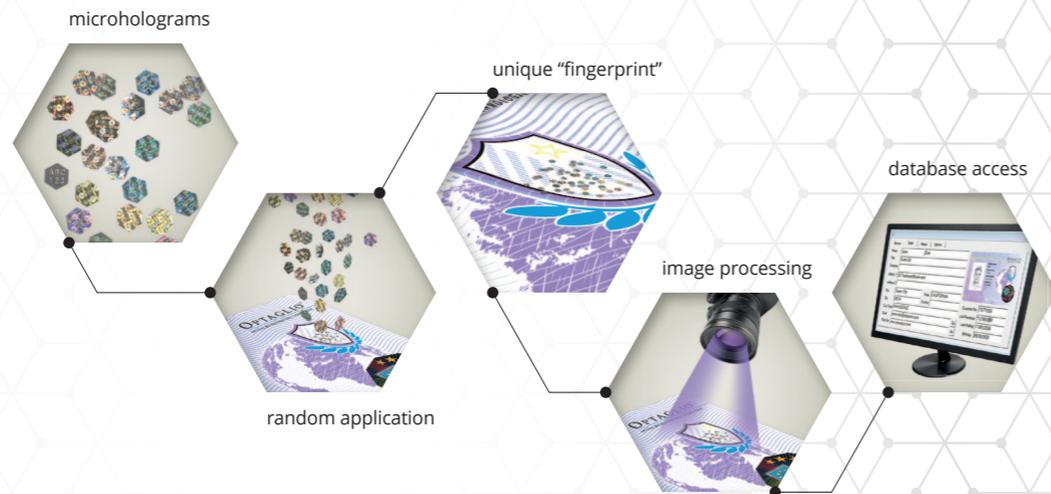
WITH THEIR "FINGERPRINTS"

ONCE A DOCUMENT IS CREATED, IT CANNOT BE REPRODUCED EVEN BY ITS OWN MANUFACTURER.

It could seem that security holograms cannot be used for identification of particular documents. How can we identify a particular hologram when all of them are produced from the same master hologram? However, OPTAGLIO has developed a solution sometimes described as "document holographic fingerprint." It is based on microholograms; tiny metallic particles with holographic surface and engraved letter (see more in μ H section). These microholograms of size from 40 micrometers are scattered in the defined area of the document. Therefore each card is an original that can be easily distinguished from other cards.

A software application covers the following functions:

- > Getting documents with a particular distribution of holograms, create database records and provide them with metadata.
- > Keeping records in accordance with information security requirements (confidence, integrity, availability).
- > Getting a card during an identity check, comparing with database records and identifying it.



YOU CAN EXACTLY IDENTIFY FROM WHAT PASSPORT WAS REMOVED THE ABUSED ELEMENT.

YOU CAN SAY WHEN THE PASSPORT WAS ISSUED, WHO WAS ITS HOLDER ...



IN-HOUSE APPLICATION OF OVIMAGE

OPTAGLIO delivers application machines to enable card producers to apply OVImage in-house. With this machine:

- Operators fulfill microholograms and polycarbonate sheets into feeders.
- The machine scatters microholograms into predefined areas.
- Microholograms are attached to the foil with a special liquid that vanishes before lamination.
- The holographic layer is ready for lamination into the card.

BUSINESS BENEFITS

- FUNDAMENTAL ENHANCEMENT OF PROTECTION. An attacker would need to replicate not just microholograms but also their mutual position.
- INPUT FOR FORENSIC INVESTIGATION.
- COST SAVING, because microhologram don't cover entire card but only a defined area.
- EXCELLENT VALUE - PRICE RATIO. More protection for less money.
- OVImage is delivered as polycarbonate layer with microholograms scattered. This foil is either embedded into a card during lamination or used as a cover.



ANY NUMBER AND SIZE

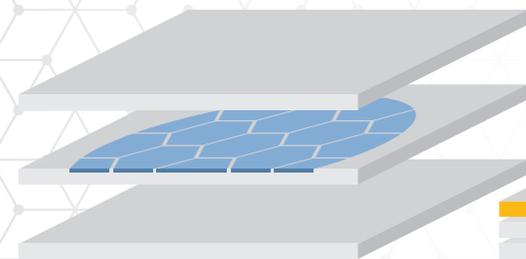
OF HOLOGRAMS ON A CARD WITHOUT IMPACT ON PRICE

If you are planning a production of millions of polycarbonate ID cards, you should consider OVMesh Unlimited. Especially if you want more than just a metallic patch but rather prefer to apply more elements, cover more extensive area and use transparent and metallic holograms on the same card. OVMesh Unlimited is a hologram printed directly into the polycarbonate foil and divided into miniature parts. During lamination, melted polycarbonate flows through the hologram and a single homogeneous unit is created. Neither adhesive is needed.

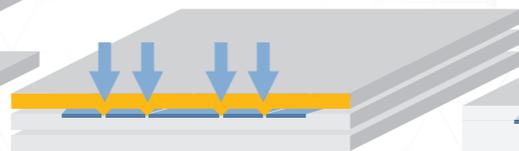
OVMESH UNLIMITED
IS THE BEST
SOLUTION
FOR MILLION
POLYCARBONATE
CARD BATCHES.

The following features help the card producers to ensure easy integration OVMesh Unlimited into their production processes:

- > Easy processing. Holograms are delivered on polycarbonate sheets or rolls. Card producer just embeds the holographic layer between other layers for lamination.
- > Optional thickness of the sheet and its position in the card structure.
- > Trouble-free personalization.
- > No special requirements on lamination conditions in terms of pressure, heat and time.



Holographic layer before lamination



Melted polycarbonate lamination



Card after lamination:
A homogenous unit with hologram inside



OPTAGLIO'S
UNIQUE VISUAL
TOOLS HAVE
RESULTED IN
A COUPLE OF
INTERNATIONAL
HOLOGRAPHIC
MANUFACTURERS
ASSOCIATION
AWARDS.



BUSINESS BENEFITS

PERFECT DOCUMENT PROTECTION

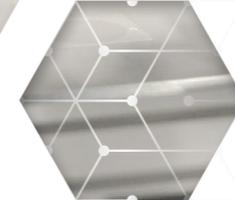
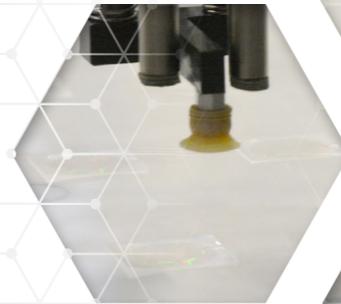
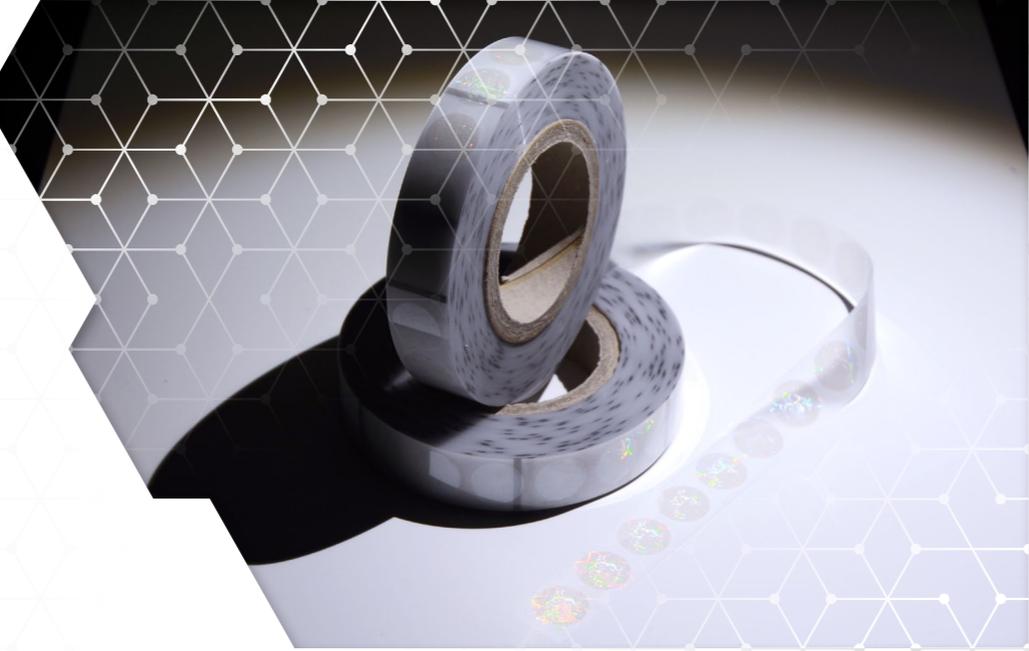
- > inimitable visual effects
- > imitation-proof technology for creating holograms
- > excellent building in into the card

VIRTUALLY UNLIMITED GRAPHICAL OPTIONS in terms of number and sort of elements

HOLOGRAM GLEAM

Hologram size without any restriction UP TO THE ENTIRE CARD COVERAGE without impact on the price at all

OVMesh Smart



OPTAGLIO
IS THE GLOBAL
LEADER IN E-BEAM
LITHOGRAPHY.

SPEED AND EFFECTIVENESS

FOR HUGE BATCHES OF CARDS

OVMesh™ Smart is focused on issuers, card producers, and integrators, who want to manufacture tens of millions ID cards and need the certainty of fast, trouble-free and flexible delivery. No compromise in quality, protection, and durability are accepted.

Polycarbonate holograms OVMesh™ Smart, divided into miniature parts, are placed on a polycarbonate foil. During the lamination, all foils and layers flow into one another and melted polycarbonate flows also through the spaces between hologram parts. A single homogenous card, including the hologram inside, is thus being produced.

Holograms are delivered in roles and applied on polycarbonate sheets.

Card producers especially appreciated the following features of technology and process:

- > FULL CONTROL OVER PROCESS using in-house application
- > FLEXIBILITY because OPTAGLIO can take over responsibility for these process steps that clients is not interested in.
- > SAVINGS resulted from lower requirements on material, transport, and logistics
- > TROUBLE-FREE personalization
- > NO SPECIAL REQUIREMENTS ON LAMINATION CONDITIONS in terms of pressure, heat and time.

BUSINESS BENEFITS

- PERFECT DOCUMENT PROTECTION
 - > inimitable visual effects
 - > imitation-proof technology for creating holograms
 - > excellent building in into the card

ULTIMATE DURABILITY

EXTENSIVE GRAPHICAL OPTIONS

FULL CONTROL OVER PRODUCTION PROCESS

OVMESH SMART

ENABLES CARD

PRODUCERS

TO DEVELOP

COMPELLING

CAPACITY

FOR HOLOGRAMS

APPLICATION

WHILE ENSURING

THEIR FULL

INTEGRATION

INTO THE CARDS.

IN-HOUSE APPLICATION OF OVMESH SMART

OVMesh Smart is basically designated for in-house application by the card producers.

OPTAGLIO therefore delivers PP-ID Card Hologram Applicator.

Holograms are delivered on the roles.

Operators load the roles and polycarbonate sheets into feeders.

The machine applies holograms on the polycarbonate sheets on the predefined positions. The holograms are applied by welding. No adhesive is used.

The holographic layer is embedded between other polycarbonate layers for card lamination.





THERE IS NO NEED TO MAKE A CHOICE BETWEEN MICROHOLOGRAMS AND "NORMAL SIZE" HOLOGRAMS. THE SECURITY LAYER CAN CONTAIN BOTH.

MICROHOLOGRAMS ARE ALMOST UNDESTRUCTIBLE, INCLUDING SURVIVING FIRE AND WATER.

APPLYING MICROHOLOGRAMS TOGETHER WITH OTHER SECURITY ELEMENTS

Application of microholograms further enhances anti-counterfeit protection of polycarbonate cards. However, it may be challenging for card producers to integrate microholograms into their cards without any complications to production process. OPTAGLIO offers an elegant solution. It delivers a polycarbonate layer, with microholograms scattered inside. The layer is simple laminated into the card during the production to create a single homogeneous unit. The layer can also include other security elements, such as OVMesh™ and security print.



APPLICATION OF µH LAYER BRING THE FOLLOWING KEY BENEFITS:

- ENTIRE CARD COVERAGE with microholograms, transparent holograms, metallic holograms, holographic stripes, security inks applications etc.
- OPTIONAL THICKNESS OF THE LAYER and its position within card architecture.
- NO SPECIAL REQUIREMENTS ON LAMINATION CONDITIONS. The holograms are sufficiently resistant against heat, pressure and other influences.
- CARD READY FOR PERSONALISATION. The layer with microholograms can be made from laserable polycarbonate. It is also possible to write into deeper layers through the holographic layer.

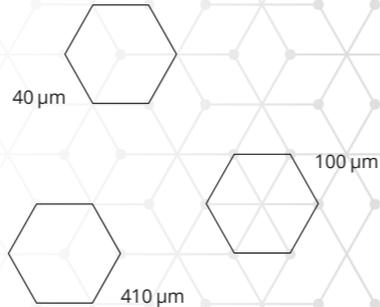
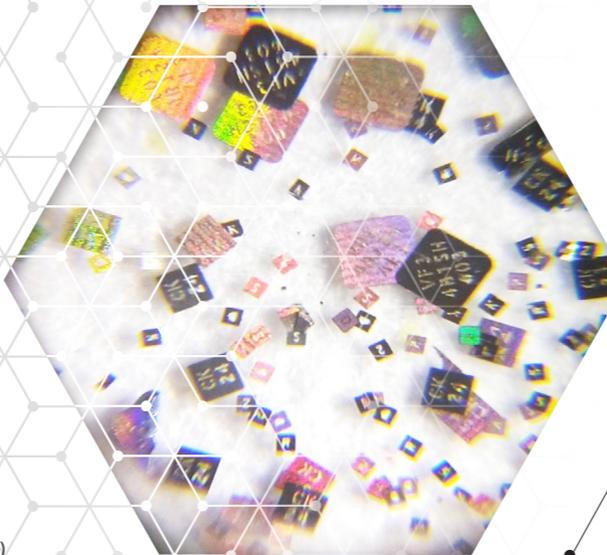
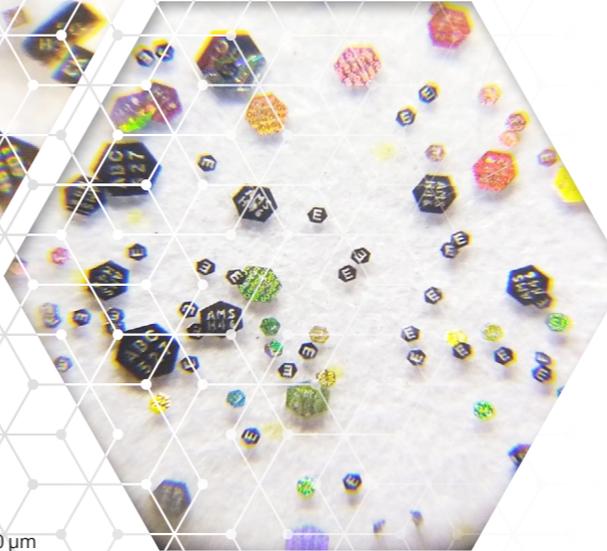
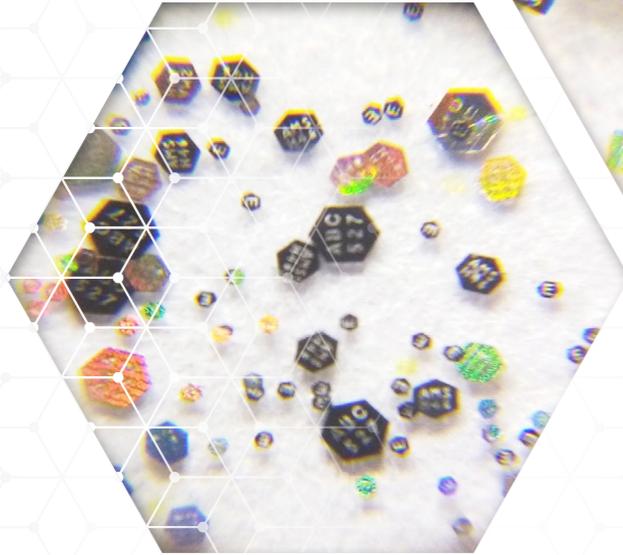
µH Layer



Micro holograms

THERE HAS NEVER BEEN EVEN AN ATTEMPT TO FALSIFY A DOCUMENT PROTECTED BY AN OPTAGLIO'S HOLOGRAM

OPTAGLIO HAS BEEN IN THE FOREFRONT OF DEVELOPMENT OF TECHNOLOGIES OF OPTICAL SECURITY FOR MORE THAN 20 YEARS.



Microholograms are extremely small metallic particles, which look like dots grains of metallic dust to a naked eye. Viewed under magnification, it is obvious that they are artificial regular objects with holograms.

MICROHOLOGRAMS ENABLE SEVERAL LEVELS OF INSPECTION.

- Basic intuitive inspection by a naked eye (presence of microholograms)
- Detailed inspection with a magnifier (engraved letters and presence of holographic surface)
- More detailed inspection with a microscope (viewing hologram including all visual effects)
- Forensic inspection (microholograms are almost undestructible, including surviving fire and water)

EACH INDIVIDUAL MICROPARTICLE BEARS HIGH SECURITY HOLOGRAPHIC FEATURES BASED ON E-BEAM TECHNOLOGY.

Diffractive microtext
OPTAGLIO GENUINE

Diffractive kinetic effect visible at 90°

Nanotext at the border – 2,5 μm
International spelling mistake **SECUREI**

Nano graphic motive
200 nm/pixel

Special optical elements –
star shape axicon

OPTAGLIO invented microholograms more than 10 years ago and patented them. This advanced anti-counterfeit protection tool has been applied into ten of millions of paper-based documents and polycarbonate cards.

- For each client, specific microholograms are developed. The client decides about the following.
 - SIZE. According to the client requirements, the size can be between 40 micrometers and one millimeter.
 - SHAPE. Often is it a hexagon or a square but microholograms can have almost any shape, according to the client's decision.
 - HOLOGRAM. Most of advanced visual effects can be applied on microholograms.
 - SYMBOLS. Letters, numbers or other symbols can be engraved into microholograms as well.

WILL YOU SUCCEED IN A WORLD WHERE

PERSONAL DOCUMENT COUNTERFEITING

IS A LUCRATIVE BUSINESS?

OUR CLIENTS' ID CARDS AND PASSPORTS CAN BE

RELIABLY DISTINGUISHED FROM FAKES

IN A FEW SECONDS.



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OPTICAL MICROSTRUCTURE TECHNOLOGIES

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