

OPTAGLIO®

OPTICAL MICROSTRUCTURE TECHNOLOGIES

CREATING

ABSOLUTE TRUST

TOWARDS

DOCUMENTS

AND VALUABLES



OPTAGLIO
WAS FOUNDED
BY EXPERTS
FROM CZECH
ACADEMY OF
SCIENCES.
DURING
ALL OF ITS
20-YEAR
HISTORY
HAS HEAVILY
INVESTED INTO
SCIENTIFIC
RESEARCH.

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 want 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.

WE DELIVER
FULL PROTECTION
AT A PROPORTION
OF COSTS
THROUGH OUR
PRECISE CUTTING
AND APPLICATION
ABILITIES.

ANTI-COUNTERFEIT PROTECTION BASED ON SURGICAL PRECISION

Our technologies are often preferred for a protection of most valuable assets such as personal identity because we can ensure higher security level than anybody else. Therefore we are a partner of security printing companies and integrators around the world. However, we can also find the right solution for those would have been otherwise prevented from applying first class holograms by budget limitations.

OPTAGLIO offers both excellence and flexibility. Its delivery can cover anything from holograms to complete production of documents. In its technological center, machinery for extremely exact stripes cutting, hot stamping, printing with security inks, background printing, and other operations is available. OPTAGLIO also offers machines for the production of holographic paper so that documents are made from the special imitation-proof material.



Holographic stripes

OPTAGLIO brings a method for decreasing hologram space and costs while preserving key benefits such as inimitability and genuineness/counterfeit discrimination. This method is based on immensely exact cutting holographic foils.

PRODUCTION OF STRIPES

We have invested huge effort into building an extremely exact cutting competence. Through unbeatable preciseness, speed and effectiveness we can ensure:

Thin slitting – a very narrow stripe up to one millimeter can be taken from a holographic foil.

Precise slitting in register – the stripe can be so positioned that entire holographic motive is centered - wider possibilities and no limitations in design.

Adding more security elements, such as printing with various security inks or demetallization features, is possible as well.

Adding microholograms to enhance a level of anti-counterfeit protection.

The stripes can be delivered for an in-house application.

Arbitrary application marks matching customers application technology.

Flexibility in terms of spools selection and way of winding. We can meet almost any client requirement in terms winding, including:

- Reel winding.
- Bobbin winding.
- Special windings with flat flange spool.
- Special winding with tapered flange spool.
- Inner diameters: one inch, three inches, 16 mm, 22 mm and possible others.

OPTAGLIO
ENABLES
EVEN CLIENTS
WITH LIMITED
BUDGET TO APPLY
FIRST-CLASS
TECHNOLOGIES
TYPICAL FOR
BANKNOTE
PROTECTION.

PRECISE SLITTING
OF THIN STRIPES
IN REGISTER IS
A SECURITY
FEATURE
IN ITSELF.
IT IS DIFFICULT
FOR COUNTERFEITERS
TO ACCESS SUCH
TECHNOLOGY.



SUPPORT OF SMOOTH DOCUMENT PRODUCTION PROCESS

OPTAGLIO can apply holographic stripes on paper documents using HOT STAMPING technology.

With OPTAGLIO technology, stripes up to 1 mm width can be applied on paper or plastic substrates.

OPTAGLIO extends options available to document producers without such precise technology.

BUSINESS BENEFITS

- Saving of costs with no impact on security
- Saving of space on documents
- Possibility to place also other security elements on the stripe
- Possibility to place microholograms on the stripe

Patch holograms

A patch hologram can seem like an ordinary item at the first glance. However, there is a big difference between first class products of global leaders and "standard holograms" produced by hundreds of local companies.

OPTAGLIO is a preferred supplier of security holograms for documents that need a very strong anti-counterfeit protection.



OUR TECHNOLOGIES
PROTECT
TAX STAMPS
IN 30 COUNTRIES.

THE BEST QUALITY, THE MOST ROBUST SECURITY

As the market leader in e-beam lithography, working in resolution up to 2,5 million DPI, we can apply some of the visual effects that cannot be followed by anybody else. These effects have been developed by OPTAGLIO research, some of them have been patented.

There is no chance to either copy or imitate OPTAGLIO's holograms, among other, because their creation is based on sophisticated mathematic algorithms that cannot be derived from a ready hologram.

These holograms can be integrated with other security elements, including microholograms.

VERY GOOD VALUE FOR MONEY

Thanks to massive investments into advanced machinery in past years, our production is very effective in terms of time, energy and especially material such as foils.

We can make holograms smaller, preserving their full protection capabilities and all visual effects to save space on a document, material and costs.

OPTAGLIO
HOLOGRAMS
HAVE BEEN
REPEATEDLY
AWARDED BY
PRESTIGIOUS
INTERNATIONAL
PRIZES.

FLEXIBLE SUPPORT OF FLUENT PRODUCTION PROCESS

We are proud of our reputation of a partner that can meet requirements of different security printing companies to support their specific processes. There are several ways our holograms can be applied.

Hot stamping in OPTAGLIO based on advanced Japan technology effectively treated holographic foil and thus saving costs.

OPTAGLIO can also add other security elements or even take responsibility for background printing.

Delivery of holograms on roles (with or without registration marks) to enable document producers to apply holograms in-house by various application units.

OPTAGLIO HOT STAMPING CAPACITIES

can be used for patches and /or stripes application with the following parameters:

Substrate up to 600 mm width

Stripes of width 1 - 17 mm, patches up to 30 mm

Up to 12 stripes to a substrate in one run

Possibility to include also background printing and security printing

Process finalization, including cutting, sheeting, lamination, hacking out etc.



Security and background printing

EVERYTHING YOU NEED FOR COMPLETE DOCUMENT PRODUCTION

Advanced printing machines have been installed in OPTAGLIO technology center in Lochovice, Czech Republic. The company is thus able to complement hologram delivery and application with comprehensive services.



YOU CAN FIND OPTAGLIO HOLOGRAMS ON HIGHWAY VIGNETTES IN MORE THAN 10 COUNTRIES.

OPTAGLIO's printing portfolio cover:

Printing with fluorescent inks. The printed items are invisible under normal lighting. However, they can be seen under an ultraviolet light.

Printing with iridescent inks. A de facto mandatory feature of banknotes and securities protection.

Printing with optically variable inks, which change their color depending on an angle of coming light.

Printing with magnetic inks with microscopic iron parts enabling machine reading and thus automated checking genuineness.

Water based inks printing focused especially on the **food industry** and other markets with health protection requirements.

Wide format flexo printing up to 670 mm to deliver full service, including background printing and decrease costs of small format document production, especially thanks to OPTAGLIO's ability of extremely exact cutting.

Process finalization, including cutting, sheeting, lamination, hacking out etc.

WE ARE PROUD OF OUR REPUTATION OF THE LEADER IN ANTI-COUNTERFEIT PROTECTION INNOVATION.

BUSINESS BENEFITS

PROCESS SIMPLIFICATION FOR DOCUMENT PRODUCERS. Several steps with different supplier and/or departments are replaced by one comprehensive step performed by OPTAGLIO.

SAVING TRANSPORT COSTS. There is no need to organise, manage, secure and pay several transports of documents between different site.

COVERING CAPACITY PEAKS for printing companies.

PRINTING TECHNIQUES EXAMPLES

- UV fluorescent inks
- Microholograms print
- OVI Ink
- Background print



Micro holograms

DAMAGE-RESISTANT ANTI-COUNTERFEIT PROTECTIVE DUST

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 (letters etched and presence of holographic surface)

More detailed inspection with a microscope (viewing hologram including all visual effects)

Forensic inspection (microholograms are almost indestructible, including surviving fire and water)



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.

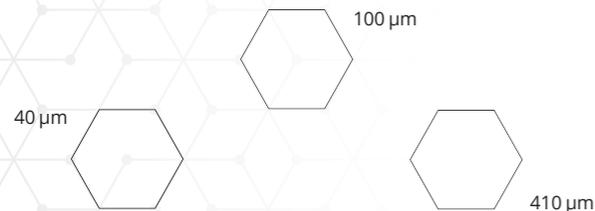
For each client, specific microholograms are developed. The client decides about the following.

SIZE. According to the client requirements, the size can be between 40 micrometers and half of millimeter.

SHAPE. Often is it hexagon or square but it 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.



BUSINESS BENEFITS

Enhancing of anti-counterfeit protection to a new level

Supplementing other security elements

Forensis inputs (microholograms can survive almost everything, including burning the paper)

OPTAGLIO
MICROHOLOGRAMS
PROTECT ALMOST
ONE BILLION
DOCUMENTS
AROUND
THE WORLD.

HOLOGRAPHIC PAPER

Can you imagine that your product would be made from a material that cannot be imitated by any counterfeiter and that can be identified easily? Paper-based documents can be protected against imitation on the level of basic material. The holographic paper has been used for anticounterfeit protection of state documents for more than 5 years.

Security holographic paper for production of stamps, securities, and other documents.

Application machine for the production of holographic paper. It is a standalone module that can be added to almost any papermaking machine.

There are several ways how to apply microholograms into paper/plastic-based documents. However, the following ones are used most frequently:

- Production of documents from HOLOGRAPHIC PAPER/FOIL including microholograms.
- PRINTING with a transparent color (lacquer) with microholograms.
- Hot stamping of a paper/plastic document with a foil including microholograms.
- Using a transparent cover layer with microholograms embedded to protect the document and information written.

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

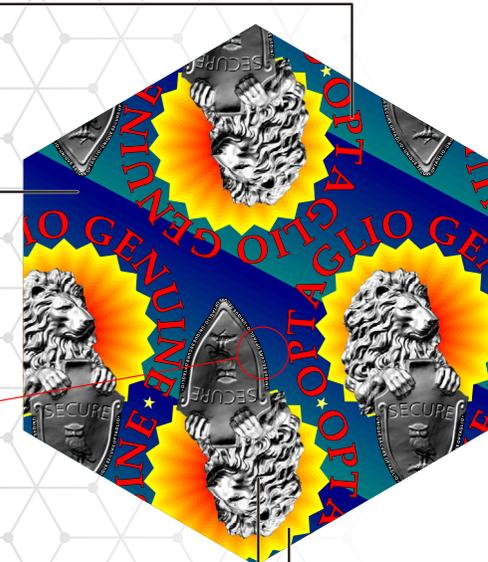
Diffractive microtext
OPTAGLIO GENUINE

Diffractive kinetic effect visible at 90°

Nanotext at the border - 2,5 μm
International spelling mistake **SECURE**



Nano graphic motive
200 nm/pixel
Special optical elements -
star shape axicon



NO MATTER YOU LIKE IT OR NOT,
THE FALSIFIERS ARE LEARNING,
INNOVATING AND ACCESSING BETTER AND BETTER TECHNOLOGY.

WE HELP GOVERNMENTS AND ORGANIZATIONS AROUND THE WORLD TO APPLY
LATEST RESULTS OF SCIENTIFIC RESEARCH
TO ENHANCE THEIR ADVANTAGE OVER ANY ATTACKER.



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OPTICAL MICROSTRUCTURE TECHNOLOGIES

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