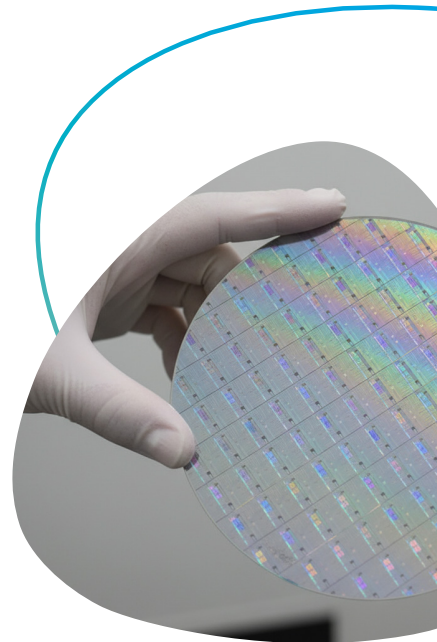
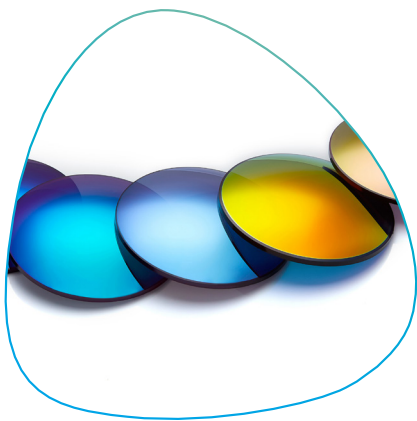


SURFACE MATERIAL ENGINEERING

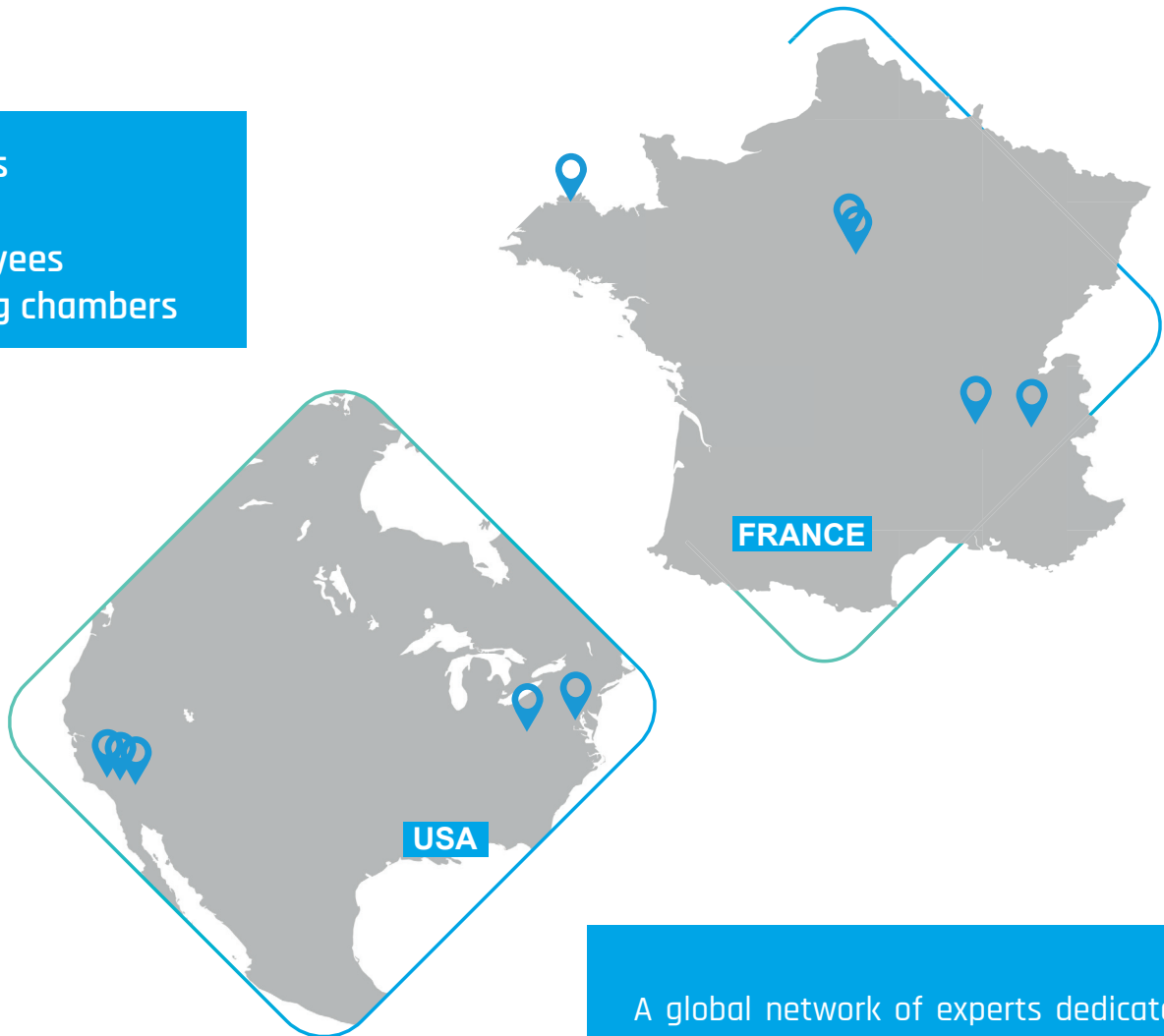


“A Pioneer of Surface Material Engineering, Dedicated to Transforming Science into Industrial Reality”

PHOTONICS EXPERTISE ACROSS TWO CONTINENTS

Photonics fabrication from R&D to volume production

- 10 locations
- 2 countries
- 305 employees
- 50+ coating chambers



A global network of experts dedicated to advancing photonic technologies. By combining research, engineering and industrial capabilities, HEF Photonics delivers innovative solutions for the most demanding applications.



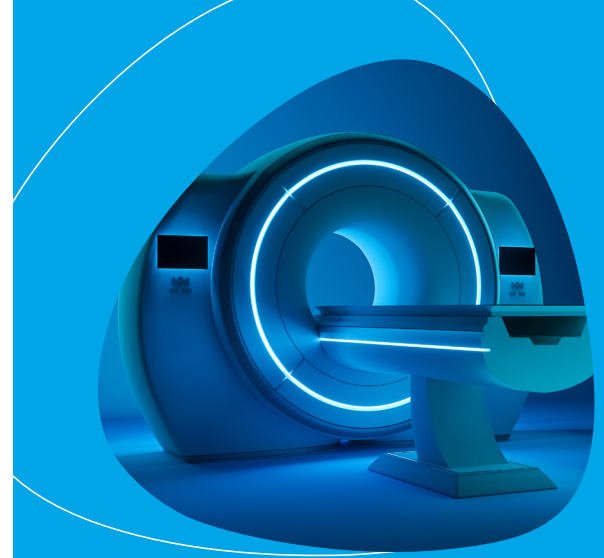
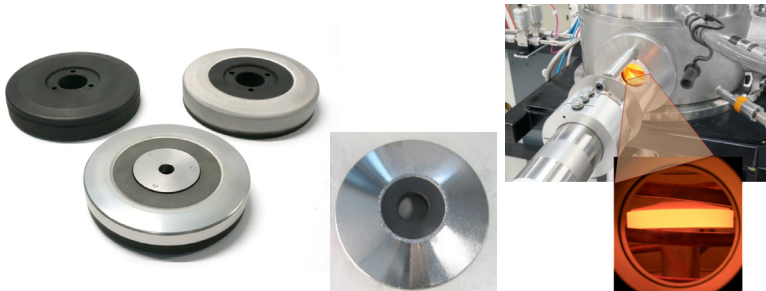
ACERDE

LIGHT ROTATING ANODES, INNOVATIVE SOLUTION IN X-RAY TUBES

ACERDE has developed a unique know-how on high temperature CVD for thick coatings and high purity powders.

The company provides solutions to:

- Refurbishment of existing X-ray targets with W-Re alloys
- W, Re and Mo coatings on carbonaceous substrates
- Synthesis of fluoride compounds
- High temperature CVD deposition



MAIN MATERIALS

W / Re / Mo

MAIN SKILLS

HT CVD
Fluoride chemistry

MAIN APPLICATIONS

Graphite X-ray rotating anodes
(60 mm to 200 mm anodes)
Refurbishment of used X-ray anodes
Thick coatings for harsh environment
High purity powders



HEF PHOTONICS

PHOTOLITHOGRAPHY & OPTICS

Precision optics and photolithography at the highest level.

Experts in precision optics, photolithography, and thin film technologies deliver a complete range of high-end optical solutions – from coating and lithography to advanced polishing and optical assembly. Integrated capabilities ensure exceptional quality and consistency across the entire process chain, from prototype to large-scale production, and from UV to IR.

Activity sectors:

Aeronautics, Astronomy, Electronics, Medical, Defense, Telecommunications, Space, and Industrial applications.

METALLIZATION

on all types of substrates (glass, single crystals, organic), by E-Beam, and evaporation

POLISHED SURFACES

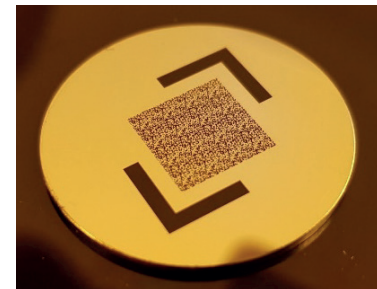
Windows, mirrors, prisms, cubes, lenses, beamsplitters, crystals, rods, double-side polishing

OPTICAL COATINGS

Anti-reflection, dielectric, metallic, infrared, dichroic, multi-spectral, and customized coatings

PHOTOLITHOGRAPHY

masking and creation of complete optical components





NEYCO

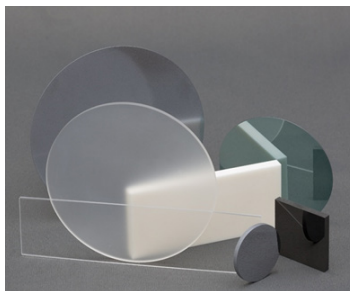
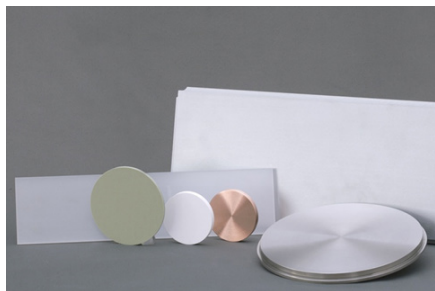
VACUUM AND MATERIALS

High vacuum & UHV, inorganic materials and thin films specialist.

Neyco's structure ensures that you receive qualified and efficient personal contact in order to understand, create, transform and deliver the products you need.

Neyco is the **“Vacuum and Materials” bridge between industries and scientific research centers.**

Neyco is ISO 9001:2015 and ISO 14001:2015 certified, and committed to achieving the highest quality standards with minimal environmental impact.



MAIN SKILLS

Materials: pellets, sputtering targets & backing plates, precious metals, filaments & boats, cones & liners, wafers & substrates

Thin films: thickness measurement and quartz, magnetrons, electron beam guns

Vacuum chambers & components

Sputtering & evaporators on request





KERDRY

THIN FILM COATING

Kerdry realizes standard coatings on request.

The company can integrate new projects from initial phase to industrialization.

A wide range of applications:

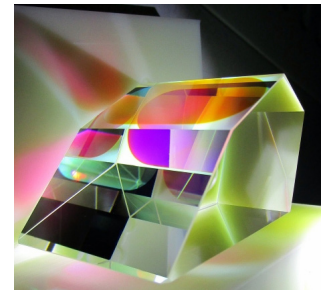
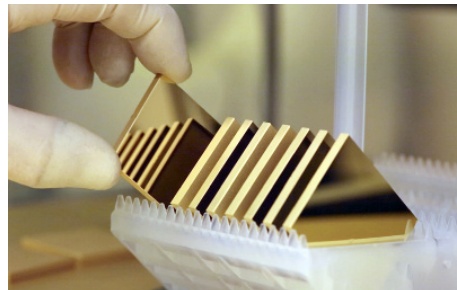
- Spatial, Defense, Metrology,
- Optoelectronic, Astronomy, Medical, Photonics, Luxury,
- Telecommunication

Manufacturing features:

16 coating machines in 1000 m² of clean room.

Substrates up to 1400 mm diameter.

Combination of metallic and optical coating on the same substrate.



METALLIC COATING

(Au, Ti, Pt, Ag, Al, Cu, Cr, Ni, Nb...)
Evaporation and Sputtering Mirror,
Soldering, Conductivity,
Air tightness of packaging...

OPTICAL COATING

Dielectric coatings, Anti-reflective, Mirror,
Dicroic, Filter ...
Bandwidth : from UV to IR (0,35 μ m
to 15 μ m.)

PHOTOLITHOGRAPHY

On substrate from 2" up to 8"
Lift-off process, Classical process
Resolution: few micrometers

COATING ON OPTICAL FIBER

Optical and metallic Coating



ABRISA INDUSTRIAL GLASS

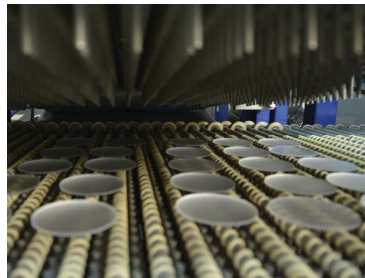
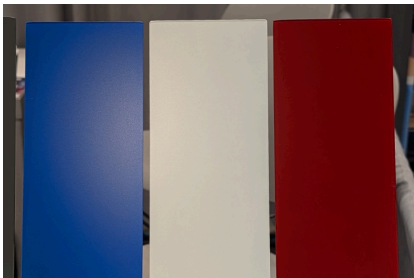
SPECIALTY GLASS & FABRICATION

Your total solution partner for specialty glass and optical fabrication.

Abrisa Industrial Glass combines specialty glass expertise with precision fabrication, strengthening and integrated optical solutions. From ultra-thin glass to complex ready-to-install assemblies, the company supports customers from prototype development to high-volume manufacturing.

Activity sectors:

Display, Medical, Aerospace, Industrial, Microelectronics, Photonics and Defense.



SPECIALTY GLASS

Technical, optical and chemically etched glass solutions from the leading U.S. supplier.

CUSTOM FABRICATION

Precision cutting, machining, edging and drilling.

GLASS STRENGTHENING

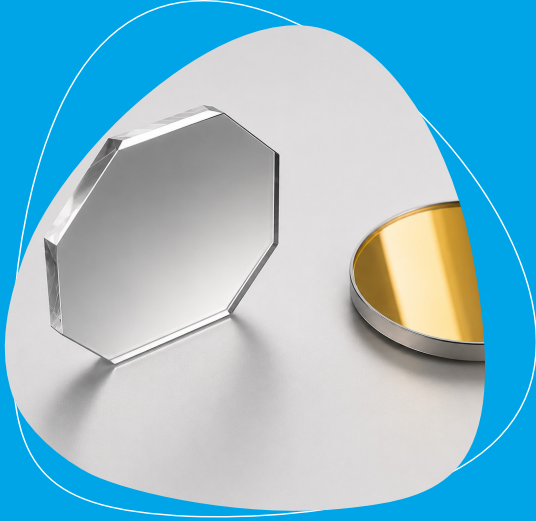
Chemical and thermal strengthening for demanding environments.

SCREEN PRINTING & GRAPHICS

Decorative and functional printing on glass substrates.

READY-TO-INSTALL SOLUTIONS

Integrated assemblies from prototype to OEM production.



ANTI-REFLECTIVE COATINGS

Broadband and laser-line AR coatings for demanding optical systems.

OPTICAL FILTERS

Bandpass, dichroic, long-wave pass, short-wave pass, UV, IR and neutral density optical filters.

HOT & COLD MIRRORS

High-performance coatings for thermal management and illumination systems.

TRANSPARENT CONDUCTIVE COATINGS

ITO and IMITO coatings for displays, heaters and EMI shielding, with optional bus bars.

BEAMSPLITTERS & MIRRORS

Precision optical components for imaging and laser applications.

ZC&R COATINGS FOR OPTICS

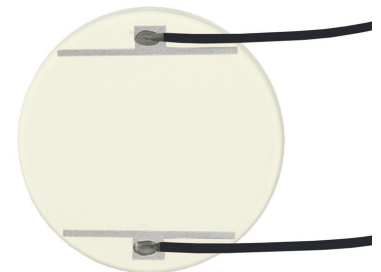
PRECISION OPTICAL COATINGS

High-performance thin film coatings engineered for demanding optical applications.

ZC&R Coatings for Optics specializes in the design and manufacture of precision optical thin film coatings for applications ranging from the ultraviolet to the far infrared. With decades of experience, the company delivers customized coating solutions for imaging, sensing, defense and advanced photonics markets.

Activity sectors:

Defense, Aerospace, Imaging & Sensing, Semiconductor, Medical, Scientific Instrumentation and Industrial Optics





EVAPORATED COATINGS, INC.

ADVANCED OPTICAL COATINGS

ECI combines advanced thin film technologies with decades of manufacturing expertise to deliver high-performance optical coatings for critical applications.

- Optical coatings for glass substrates, plastic and molded polymer optics, and fiber optic devices
- Optical filters and beamsplitters
- Anti-reflective and mirror coatings
- Ion Beam Sputtering (IBS) technology
- Transparent conductive coatings (ITO)
- Prototype to volume production
- UV, visible and infrared applications

Activity sectors:

Aerospace, Defense, Semiconductor, Medical, Telecommunications and Scientific Instrumentation.



OPTICAL COATINGS

Anti-reflective, mirror and custom multilayer coatings for demanding optical systems.

OPTICAL FILTERS

Bandpass, dichroic, long-wave pass, short-wave pass and beamsplitters.

TRANSPARENT CONDUCTIVE COATINGS

ITO and conductive thin films for optical and electronic applications.

ION BEAM SPUTTERING (IBS)

Ultra-dense coatings offering outstanding stability and precision.

PROTOTYPE TO PRODUCTION

Flexible manufacturing from development projects to high-volume production.





PHOTOMASKS

Blanks for optical lithography (soda lime, borosilicate, fused silica, crown glass). Sizes from 2" to 24", thickness 0.3–6 mm.

PVD SPUTTERING

Thin films of Al, Cr, Cu, Au, Ni, Pt, Ag, Ta, Ti, Zr.

PHOTORESIST

Spin coating of positive & negative resists and BARCs up to 50"×50", up to 50 µm thick.

DOUBLE-SIDE POLISHING

From 1" – 31" (up to 50" square), thin glass down to 0.3 mm.

PHOTOLITHOGRAPHY

Lift-off and multi-layer lithography, apertures, reticles, encoders, resolution down to 1 µm.

TELIC COMPANY

PRECISION PHOTOLITHOGRAPHY

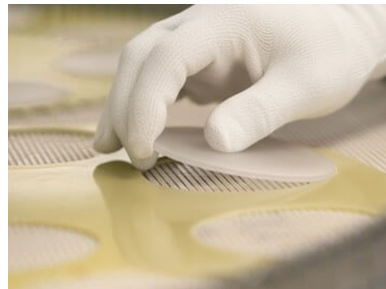
TELIC is a recognized supplier of precision thin film coatings and substrates.

The company is specialized in thin film sputtering, photoresist coating, and double-side polishing on a wide range of substrates.

TELIC combines advanced technology with decades of expertise to deliver high-quality, customized solutions for demanding applications.

Activity sectors:

Semiconductor, Nanofabrication, Microfluidics, Optics, Holography





IREIS

RESEARCH AND DEVELOPMENT SERVICES IN SURFACE ENGINEERING

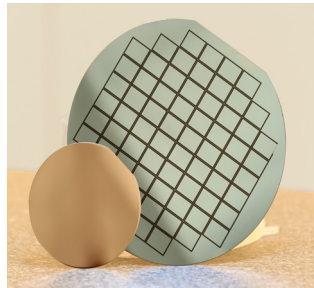
IREIS is a center of excellence dedicated to tribology, photonics, and hydrogen technologies.

The institute develops advanced solutions at the intersection of scientific research and industrial needs.

- Cutting edge optical design and materials
- Innovative surfaces functionalities
- Femtosecond laser processing
- Thin films and materials patterning
- Development of new complex optical components

Applications :

Telecommunications, Healthcare, Aerospace, Space, and Defense



EXPERTISE

Tribology
Photonics
Hydrogen technologies
PVD & PE-CVD coatings
Functional powders
Femtosecond laser processing



Contact

HEF Groupe

Zi Sud, 69 Avenue Benoit Fourneyron | 42160 Andrézieux-Bouthéon | France

For locations in France:

Jorge Julián SANCHEZ MARTINEZ

+33 (0)6 42 02 66 57 | commerce.france.hefphotonics@hef.group

For locations in the USA:

Arnaud ZOUBIR

+1 805 744 5216 | azoubir@hef.group