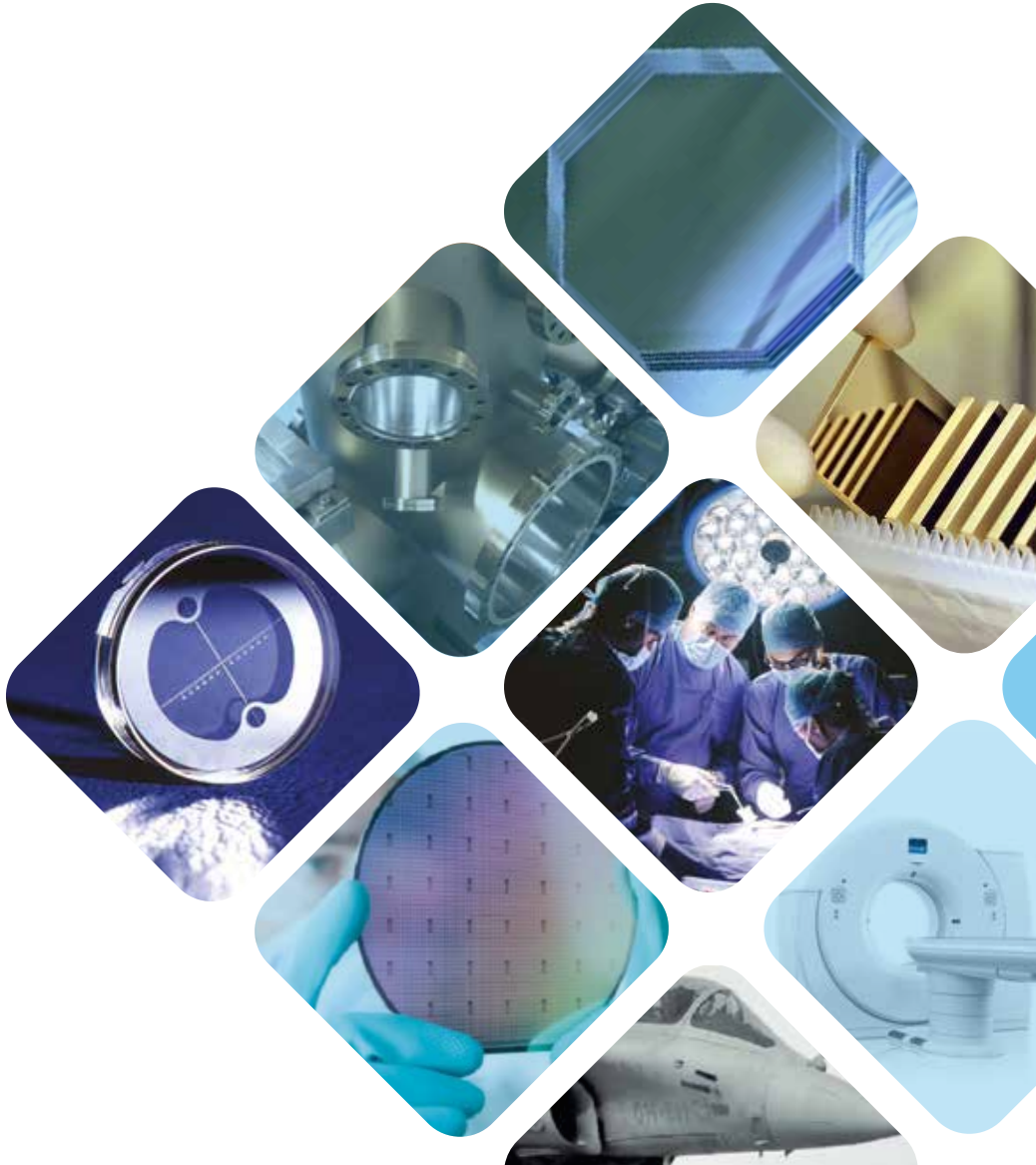
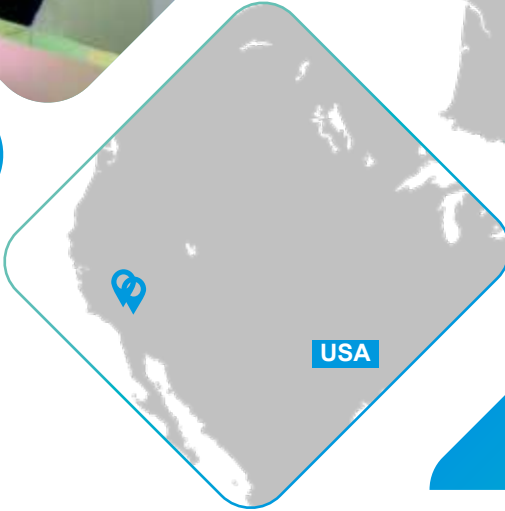




Surface materials engineering  
From R&D to large volume





- 8 factories
- 2 countries
- 250 employees



HEF Photonics, today on 2 continents  
and tomorrow with you around the world.



HEF Photonics serves a variety of markets including:



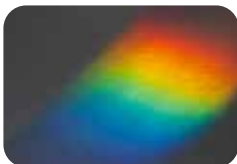
Defense



Industry



Medical



Instrumentation



Research



Aerospace

## FROM PROTOTYPE TO VOLUME PRODUCTION

### Precision polishing:

- Precision up to  $\lambda / 20$  for diameters under 300 mm
- All types of materials: silica, sapphire, silicon, germanium, ceramics, quartz, zerodur...
- All types of shapes : windows, mirrors, prisms, lenses, beamsplitters, waveplates, filters and more
- Polishing of dimensions up to 1000 mm

### Glass fabrication technology:

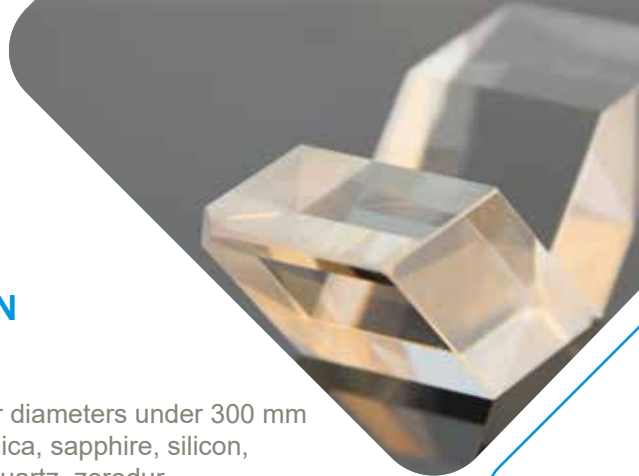
- Chemical strengthening
- Heat tempering
- Screen printing of Graphics
- Laser-marked displays

### Optical thin films:

Over 35 chambers dedicated to fulfill our customer requirement  
Technologies : Ebeam deposition, Ion Assisted Deposition, Sputtering evaporation, thermal CVD deposition.

Coating solutions are offered from 200nm in the UV to 20 microns in the far infrared

- Anti-reflective, metallic, dielectric coatings, beamsplitters, filters, polarizing coatings
- Multispectral coatings
- Internal (prism) or external
- Filters: broadband, narrow band
- Intense black coating
- Transparent conductive (ITO)
- Bus Bar
- Hydrophobic solutions
- High laser damage threshold coatings





## Masking and lithography

Engraving using different types of technology (photolithography, lift-off, wet etching, laser)

- Masking and creation of complete optical components
- On substrates from 2" up to 8"
- Resolution down to 1 $\mu$ m in width and 0.15 $\mu$ m in thickness
- Different types of substrates and etched materials (Au, Al, Ag, Cr, Cu, Ni...)

## Electroforming

- Nickel deposition, thickness from 30 to 200 $\mu$ m
- Circles, slits, closed shapes down to microns
- Coated for emission and reflection

## Precision dicing

Technologies : laser, scribe cutting, waterjet, slicer, wafer dicing

- Glass, stacks, Si wafer, metals, plastics
- Thickness down to 50 $\mu$ m
- Lateral roughness down to 3 $\mu$ m
- CNC machining



## Contact

Philippe Goupilleau  
Business Development,  
Key Account Manager  
pgoupilleau@hef.group  
+33 (0)6 37 46 21 55

[www.hef.fr](http://www.hef.fr)

