OUR SERVICES IN THE AEROSPACE TECHNOLOGY SECTOR

We produce flat and spherical sapphire windows to protect optical sensors, camera systems and infrared optics. Our components fulfil the highest requirements regarding the purity of materials and distortion-free optics. Thanks to our experience, our modern machinery and our quality control we can guarantee precise, quick production.

With us, you get everything from a single source. We will support you during the whole production process, from the development of the prototype to assembly.
OUR WORKFLOW

DEVELOPMENT AND SUPPORT
Our team provides comprehensive support in the development of new products. This includes the selection of suitable materials, definition of the working techniques, prototype development and establishing of serial production. We ensure the prototype’s suitability for series production, we document all the steps necessary for series production, and we define and implement suitable qualification methods.

PRODUCTION
First we cut the crystals into blanks. Therefore we use ID saws, wire saws, circular saws and multiblade saws.

Then we grind the blanks into the desired form. We can realize the most varied geometrical shapes using CNC-processing technologies, complex combinations are also possible. We possess a large number of tools or develop client-specific tools when necessary. Thanks to double-sided processing technology we are in a position to realize large quantities.

After grinding, we polish the parts. We offer a multitude of different polishing processes that make it possible to fulfil client-specific surface-finishing requirements according to DIN/ISO and also MIL standards.

ENGRAVINGS, COATINGS AND ASSEMBLIES
We offer laser engravings, part identification and reference marking. We also offer specific optical coatings such as AR coatings, ITO coatings and also mirror coatings. When joining sapphire parts to a casing or mounting, choosing the right technology is decisive. Besides mechanical mounting, the other usual joining technologies are gluing, soldering, welding and shrinkage.

QUALITY CONTROL
Our core focus is on the quality of the finished pieces which includes the material and the technological precision. From choosing the raw materials through production to assembly, each step of our work is subject to the highest requirements and is documented and traceable according to international standards.
TECHNICAL SPECIFICATIONS FOR AEROSPACE TECHNOLOGY

SPHERICAL DOMES
- Dimensions from $\odot 30\text{mm}$ to $\odot 180\text{mm}$, field of view realizable up to $180^\circ$
- Radius up to $R 90\text{mm}$, large range of tools available to realize rapid prototyping
- Complete processing chain from crystal to finished dome, from one source
- Experienced in supplying large-scale series, production of more than 2,500 units
- Edge design according to customer specifications with CNC-processing technology

FLAT WINDOWS
- Dimension range of square or rectangular windows up to $# 150\text{mm} \times 150\text{mm}$
- Contour and edge design realizable to customer specifications with CNC-processing technology

RAW MATERIAL
- Selected single crystals that meet the highest purity requirements
- Raw material with perfect crystal lattice and precise orientation of optical axis
- Diversified sourcing of sapphire crystals for maximum independence

SURFACE QUALITY
- Surface finish with roughness values below 20 angstroms
- Surface form optimized to 2 fringes per $\odot 25.4\text{mm}$

SURFACE TREATMENTS
- Optical coatings to optimize transmission properties on request
- Electrically conductive and optically transparent coatings [ITO]

TYPICAL COMPONENTS
- Domes
- Large windows
- IR windows

All products are made in-house by the Kyburz Sapphire Team, using materials of Mohs 9 hardness.