



Solutions in Optics.
High-tech in Glass.

BERLINER GLAS GROUP

Light can be used anywhere. If you have the right know-how.

The Berliner Glas Group's extensive knowledge in optical technology allows us to utilize light for a variety of purposes. These include such things as revolutionary applications in medicine, high-precision measuring and micro- and macro-processing, pin-sharp print and film images, high-resolution displays, detailed analyses using microscopy and also as data carriers to ensure smooth communication even under extreme conditions. This is just the beginning. Welcome to the age of light. Welcome to Berliner Glas.

Precise, sophisticated and powerful solutions

The advanced development of new components, assemblies and systems is our passion. The Berliner Glas Group consistently pushes leading-edge solutions using modern precision optical systems, mechanics and electronics to produce OEM products made of glass and glass-like material.

From precise optical key components, assemblies and complex systems, to electro-static or vacuum chucks and high-quality refined technical glass – the Berliner Glas Group offers tailor-made solutions which will enhance the performance of your products.

Always one step ahead

The Berliner Glas Group consists of medium-sized companies with decades of experience and state-of-the-art knowledge in optical technology and technical glass processing. Our 1,000 employees develop and produce products in the owner-managed company groups, quickly, flexibly and orientated towards our customers' needs.

Berliner Glas – at home all over the world

The personal exchange with our customers is very important to us. And not everything can be sorted out by telephone and via the Internet. The fact that we have companies in the USA and Asia means that you don't have to travel far to meet us. This makes individual on-site support possible. In your area, too!

Berliner Glas Group at a glance:

- ◆ Development and production of high-precision and ultra-high-precision optical components, assemblies and systems
- ◆ Reliable OEM supplier for customers worldwide
- ◆ Fast development at unsurpassed quality
- ◆ Assembly and metrology in clean rooms
- ◆ Flexible with regards to batch sizes, technologies, integration and specification changes





Solutions from one source. Customer focus.

The innovative energy of our employees is an essential factor in the Berliner Glas Group's success. This innovation starts where others have given up and ends once all physical possibilities have been exhausted. We offer our customers individual high-tech products and complete solutions which allows them to establish dominant positions in their markets. We invest a double-digit percentage of our turnover in research, development, production and the training of our employees. And we are proud to have market leaders from various sectors as our customers.

World-class purchasing

We use materials from reliable and certified worldwide suppliers who guarantee continual quality and meet our high demands for quality and reliability. And last but not least, we have founded Berliner Glas Wuhan Trading. This way we ensure our high quality standards are met.

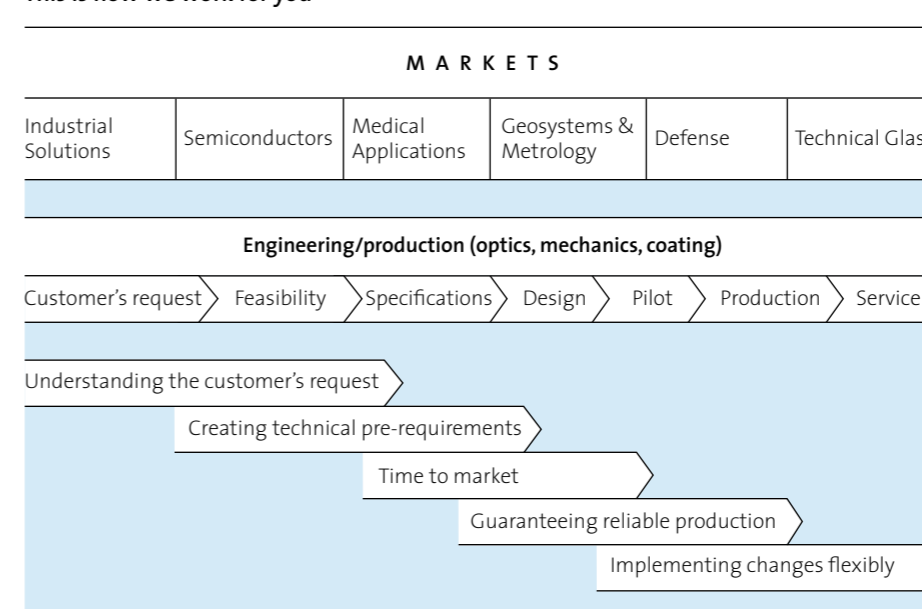
To solve problems, you need to listen

At the Berliner Glas Group you receive all solutions from one source, from the design to the finished product. Our highly qualified development teams work closely with you in all phases – this requires intensive communication and teamwork, but allows a high degree of flexibility at each stage of the development.

At the start we listen attentively and understand your needs. Then we develop a set of specifications with you, which is absolutely binding for us and therefore has to be observed down to the finest detail.

In the next stage a prototype is developed and designed in close coordination with you. This prototype is subsequently perfected in several stages until it is ready for the market, before it then goes on to assembly and system integration. At the end of this process a solution is always found which meets both your and our high quality demands – and we can prove this.

This is how we work for you



Precision is our profession

We measure what we produce. Our metrology is state of the art and is able to detect even the smallest deviations. Reliable, traceable and documented processes are a matter of course for us.

If no suitable measuring process exists for special applications, we develop it ourselves. We document our results with test certificates and guarantee the desired level of precision.

Semiconductors.

Mechanical and optical solutions for the semiconductor industry.

With customer-specific vacuum chucks and ultra-fast electro-static chucks, the Berliner Glas Group provides top yields in the production of high-performance chips, displays and other fragile applications. Our chucking systems are characterized by an extremely high flatness and very low parallelism deviations. In addition, we also offer a wide range of high-precision measuring systems for wafer inspections, which allow measurements beyond the visibility of a microscope. High-precision objectives, collimators and aspherical components round off our range of inspection products.

We help design the future

To be able to accommodate an even larger number of transistors on a chip, the structures have to become even smaller. This will be possible in the future thanks to EUV lithography. We are one of the suppliers driving this technology. We are supporting leading semiconductor suppliers with our state-of-the-art knowledge in EUV optics.

Top quality thanks to top purchasing

Top logistical services are our daily business. Thousands of individual parts have to be purchased and checked for one single product. As a result, we offer a wide range of complex systems – which provides a competitive advantage for us and our customers.

Assembly work performed in a class ISO 5 clean room



MTF test station

Geosystems & Metrology.

See more from above.

No distance is too far and no object too large, too small or too complex for it to be measured with absolute precision. We provide objectives for aerial cameras, opto-mechanical assemblies for laser trackers, transceivers for 3-D measuring systems and interior triple reflectors. We supply optical systems for innovative laser-based metrology, with which both angles and dimensions as well as 3-D coordinates can be determined exactly. But we do not just measure ourselves by this.

We take a close look

When it comes to understanding your application and your requirements, we work just as precisely as our metrology.

Problem understood, problem solved

From design to model, from the prototype to series production – we offer you the entire value-added chain from one source. As the client, you are involved in the process right from the beginning.

Left: From development to series production – objectives for digital aerial cameras
Middle: Transceiver for 3-D measurement
Right: Telescopes for theodolites



Defense.

On water, land and in the air.

The Berliner Glas Group offers individual components and optics for safety and defense applications and joins them together into perfectly functioning systems. We supply heatable windows, optically and mechanically centered objectives as well as lightweight adjustable deflection mirrors for obstacle warning systems. We also produce coated panels for head-up displays, laser-based assemblies and systems for distance measuring, the detection and control of drones as well as objectives and prism assemblies for day and night observation.

First-class system development and assembly service

The requirements in the defense sector are much higher than for civil applications. With typical temperature range requirements of $-40\text{ }^{\circ}\text{C}$ to $+80\text{ }^{\circ}\text{C}$, they have to function reliably even under the most extreme environmental conditions. The highest quality and durability is essential for this and the Berliner Glas Group consistently delivers this level of performance.

Assembly: Electronic adjustment of a reticle



Mounted and heatable front panels with ITO coating



Industrial Solutions.

Right to the limit.

International OEM customers rely on our optical key components, assemblies and systems – even in space: there, our space mirrors can withstand the strongest cosmic radiation, shock and vibration stresses and large temperature fluctuations. This is possible due to the anodic bonding of glass and ceramics to highly stable support materials – one of our core competencies. We are also very experienced in laser technology: large-scale cylinder lenses and mirrors used in high-tech lasers provide the highest level of cost-efficiency in the processing of materials. Our powerful optics guarantee pin-sharp images in print and film technology.

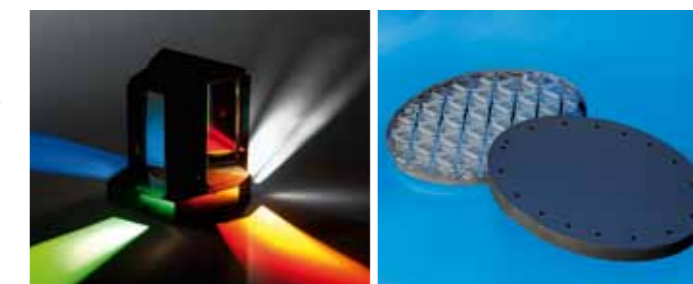
International suppliers of the highest quality

We guarantee you that our optics have very high surface quality. We verify this with first-class, and in some cases even product-specific, tests. Our metrology is state of the art, we can detect and remove even the most minor deviations.

A partner for every request

From concept through development, series production and integration – you receive world-class solutions from one source.

Optical components and assemblies



Medical Applications. Health in a new light.

The Berliner Glas Group is your experienced partner for optical solutions in medical technology, especially in the areas of ophthalmology, microscopy, dental medicine, endoscopy and laboratory analysis and diagnostics. We develop and produce these products in modern clean rooms for international medical device manufacturers. We offer tailor-made solutions, from high-quality optical key components to opto-mechanical assemblies such as beam shaping objectives or autoclavable camera heads and opto-electronic systems such as structured light 3-D scanning systems or LED cold light sources.

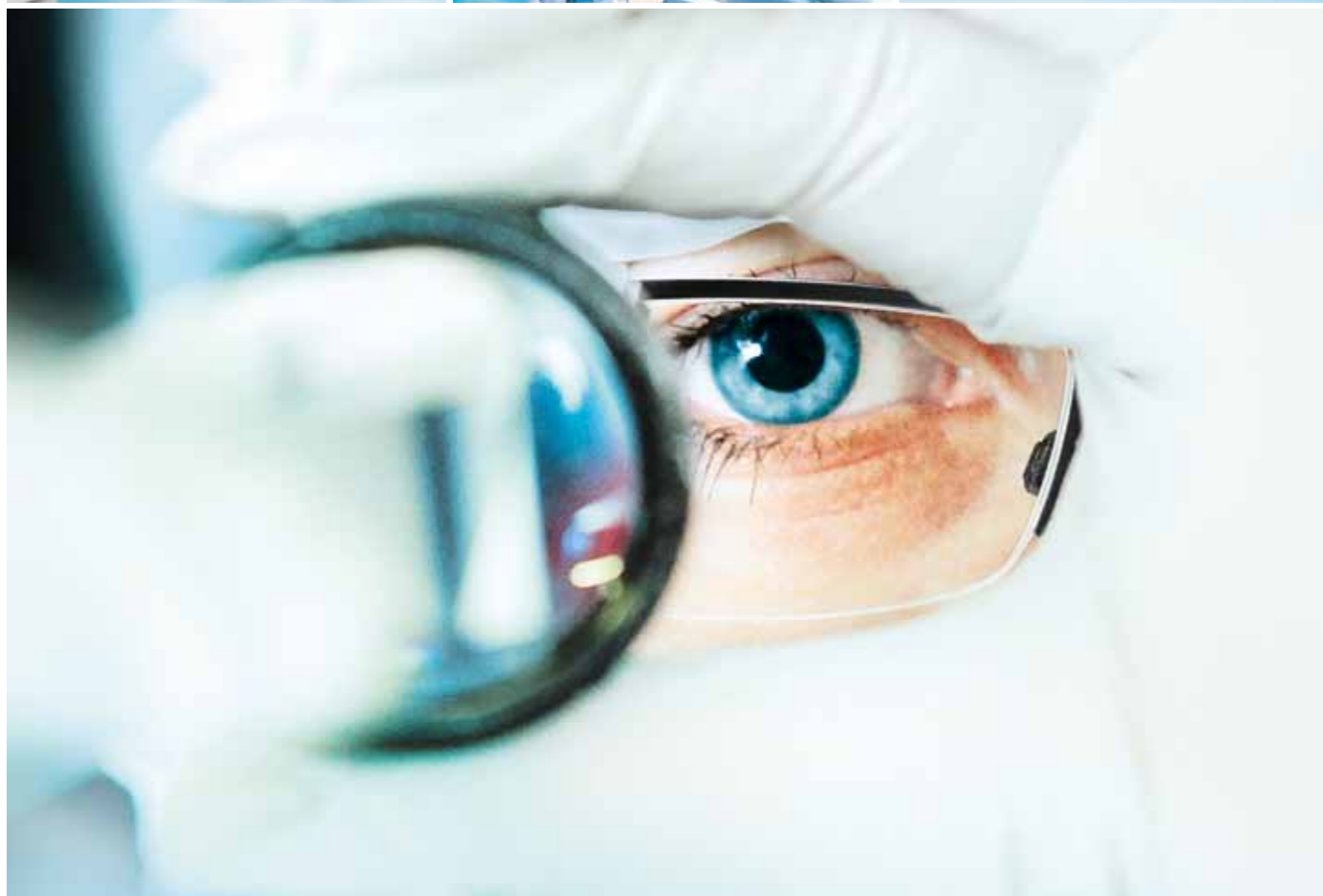
Highly qualified experts for every task

Our designers, system and design engineers, electricians and physicists have a good understanding of the special requirements of the medical technology market and design competitive solutions in close cooperation with you – optimally tailor-made to your needs and requirements.

Experience and innovation

We combine and network the knowledge and know-how of all our Business Units, which provides valuable synergies for the development of new, innovative solutions. In addition, we are also able to react quickly and flexibly to almost any market requirement with our network of selected suppliers.

Berliner Glas supplies the structured light 3-D scanning system Bluecam to the worldwide market leader for intra-oral CAD/CAM systems. High-quality optics are used in systems at the leading suppliers in ophthalmology.



Technical Glass. Giving glass a profile.



Technical glass used in protective and front panels with design-orientated finishes in accordance with customer specifications is virtually limitless. TV, monitors or mobile devices, touch-capable, safety, industrial or medical applications – the form always follows the function. We will find the right solution for almost every application and technology, shape and size. Berliner Glas offers thin glass processing in material combinations for multifunctional glass, safety glass, as well as anti-glare and everyday glass – weatherproof, sterilisable and surface-structured. Our refined surfaces are easy to clean.

Perfectly combined refining techniques

Berliner Glas has a chemical etching site, which makes it possible to make standard etchings with various defined glosses, as well as customer-specific etching structures. With its etching services, the Berliner Glas Group offers you finely structured and anti-glare glass, which we refine further for you. We laminate, coat, print, temper and shape glass using our CNC technology – in full accordance with the individual specifications of the customer.

From concept to series production

Berliner Glas partially assembles your front panels so that they are able to be mounted, or inserts your design element straight into the intended casing. Benefit from our diverse solutions, the complex test technology and metrology of the Berliner Glas Group and the wide range of manufacturing competence from one source – from draft to the series production of the mountable assembly.

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Berliner Glas KGaA Herbert Kubatz GmbH & Co.

Waldkraiburger Strasse 5
12347 Berlin

Germany

Phone +49 30 60905-0

Fax +49 30 60905-100

info@berlinglas.de

www.berlinglas.com

The Berliner Glas Group is one of the leading European provider of optical key components, assemblies and systems, as well as high-quality refined technical glass. With our understanding of optical systems and optical production techniques, we develop and integrate optics, mechanics and electronics into innovative system solutions. These solutions are applied worldwide across a wide spectrum of light-using industries – from medical technology to semiconductor industry, space technology, metrology, geodesy and analysis to defense or as displays, for example in form of televisions, monitors or navigation systems.

The Berliner Glas Group consists of companies linked by decades of experience in the development and production of optical solutions. As an owner-led medium-sized company with around 1,000 employees, we can always offer our customers tailor-made solutions of the highest quality.



Berliner Glas KG Herbert Kubatz GmbH & Co.

Weidenhalde 20
74523 Schwäbisch Hall

Germany

Phone +49 791 93295-0

Fax +49 791 93295-50

info@berlinglas-sha.de

www.berlinglas.com



Berliner Glas US

19 Appleton
Irvine CA 92602

USA

Phone +1 714 389-1756

Fax +1 714 389-1758

kliddane@berlinglasus.com

www.berlinglasgroup.com



Technical Glass

Surface Technology

Berliner Glas Herbert Kubatz GmbH & Co. KG Syrgenstein

Giengener Strasse 16
89428 Syrgenstein-Landshausen
Germany

Phone +49 9077 95895-0

Fax +49 9077 95895-50

techglas@berlinglas.de

www.berlinglas-st.com



SwissOptic AG

Heinrich-Wild-Strasse
9435 Heerbrugg
Switzerland

Phone +41 71 727-3074

Fax +41 71 727-4686

swissoptic@swissoptic.com

www.swissoptic.com



Berliner Glas (Wuhan) Trading Co., Ltd.

No. 1, 2nd Road, Huagong Park, Eastlake
High Technology Development Zone
Wuhan (430223) China

Phone +86 27 8792-8553

Fax +86 27 8719-6153

maryyang@swissoptic.com

www.berlinglas.com



SwissOptic (Wuhan) Co., Ltd.

No. 1, 2nd Road, Huagong Park, Eastlake
High Technology Development Zone
Wuhan (430223) China

Phone +86 27 8792-8588

Fax +86 27 8719-6153

wuhan@swissoptic.com

www.swissoptic.com