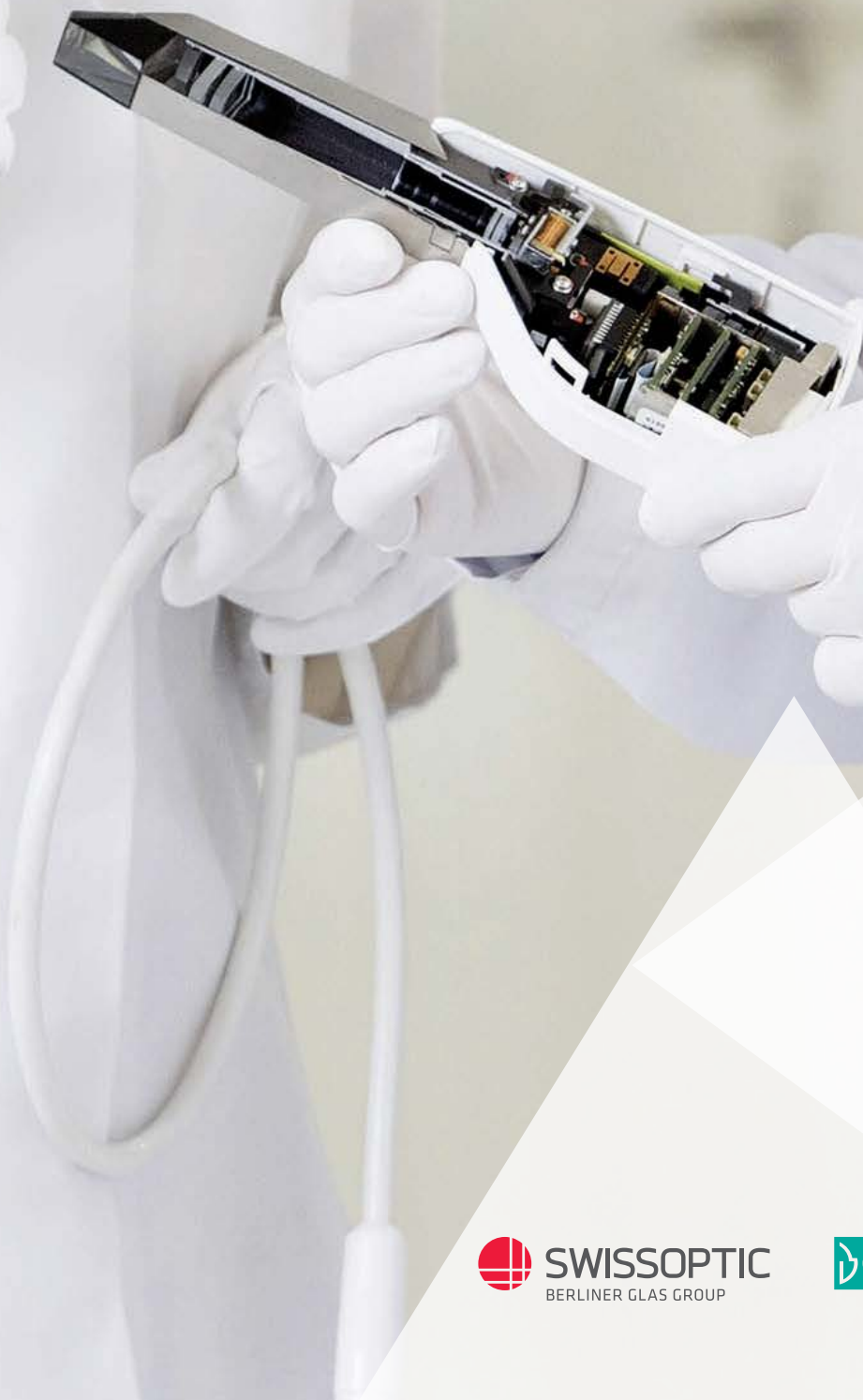


**YOUR PARTNER FOR  
OEM SOLUTIONS.**  
FROM CONCEPT TO  
VOLUME PRODUCTION.



## 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. Light already enables revolutionary applications in medicine and helps to measure products in a precise and fast way, to identify errors, to modify surfaces, to produce high-resolution displays and to perform detailed analysis. 3D printing would also be unthinkable without light. In addition, light as data carrier ensures smooth communication – even under extreme conditions. And this is just the beginning.

Welcome to the age of light. Welcome to the Berliner Glas Group.

### **Precise, sophisticated and powerful solutions.**

We in the Berliner Glas Group make light usable for high-tech applications. In cooperation with our customers we develop innovative system solutions with optical, mechanical and electronic components and bring them to production maturity.

All these innovative solutions use light as a tool to analyze, structure, produce, communicate, scan, measure and capture images. We offer you customized solutions, that meet the highest requirements.

### **Always one step ahead.**

The Berliner Glas Group consists of medium-sized companies with decades of experience in the field of optical technologies and technical glass processing. The well-trained and experienced employees of the owner-managed group of companies develop and produce complex solutions every day that are at the limit of what is technically feasible – in a quick, flexible and customer-oriented way.

### **The Berliner Glas Group is at home all over the world.**

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 do not have to travel far to meet us. This makes individual onsite support possible. In your area, too!



#### **Berliner Glas Group at a glance:**

- ▶ Development and production of optical key components, assemblies and systems
- ▶ OEM supplier for international customers
- ▶ Fast development at unsurpassed quality
- ▶ Assembly and measurement in clean rooms
- ▶ A worldwide network of suppliers
- ▶ Flexible with regards to batch size, technologies, integration and specification changes





## SOLUTIONS FROM A SINGLE SOURCE. WE FOCUS ON THE CUSTOMER.

The innovativeness of our employees is one of the essential success factors of the Berliner Glas Group. It begins where others have already given up, and ends once all physical possibilities have been exhausted. We offer our customers not only high-tech products, but we also search for complete solutions that allow them to establish dominant positions in their markets. For that purpose, we invest a double-digit percentage of our annual turnover in research and development, manufacturing and measuring processes and in the training of our employees. With great success: We are proud to have market leaders from different sectors as our customers.

### World-class purchasing.

We only use materials from reliable and certified worldwide suppliers, who guarantee continuous quality and meet our high standards. And last but not least, we have founded Berliner Glas Wuhan Trading. This way we ensure our high-quality standards.

### If you want to solve problems, you need to be a good listener.

The Berliner Glas Group provides all solutions from a single source, from concept to the finished product. During all phases of the work process our highly skilled development team will cooperate closely with you – this requires intensive communication and team work, but allows a high degree of flexibility at each stage of development.

What are your wishes? What are your individual requirements? How will the product be used? At the beginning we listen attentively, and understand your needs. Then we develop requirement specifications with you, which are absolutely binding for us and therefore have to be observed down to the finest detail.

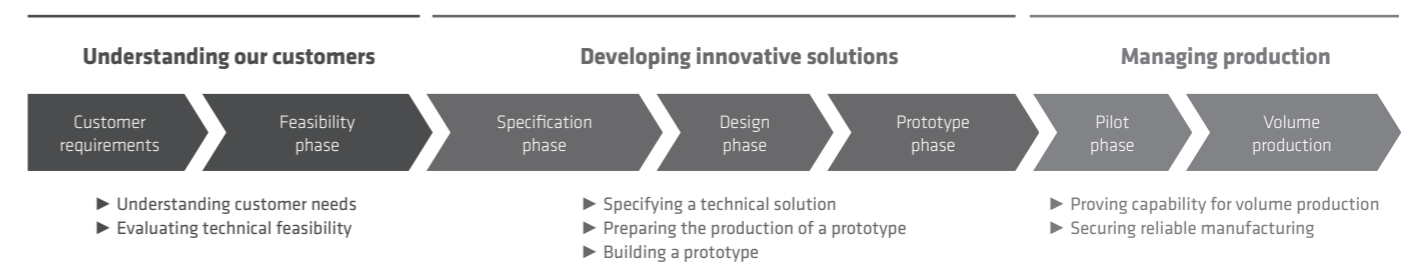


In the next step a prototype is developed and designed in close cooperation with you. This is perfected in several stages until it is ready for the market, before it finally goes on to assembly and system integration. At the end of this process there is always a solution that meets your and our high-quality standards – and we can prove it.

### Precision is our profession.

We measure what we produce. And we do it very precisely: Our measuring technology 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.

And if there are no suitable measurement methods for special applications, we develop them ourselves. We document our results with test certificates and guarantee the desired level of precision along the entire process chain.



**This is how we work with you:** We listen, develop, test, procure, produce, deliver.



## SEMICONDUCTOR INDUSTRY. RIGHT TO THE LIMITS OF THE POSSIBLE.

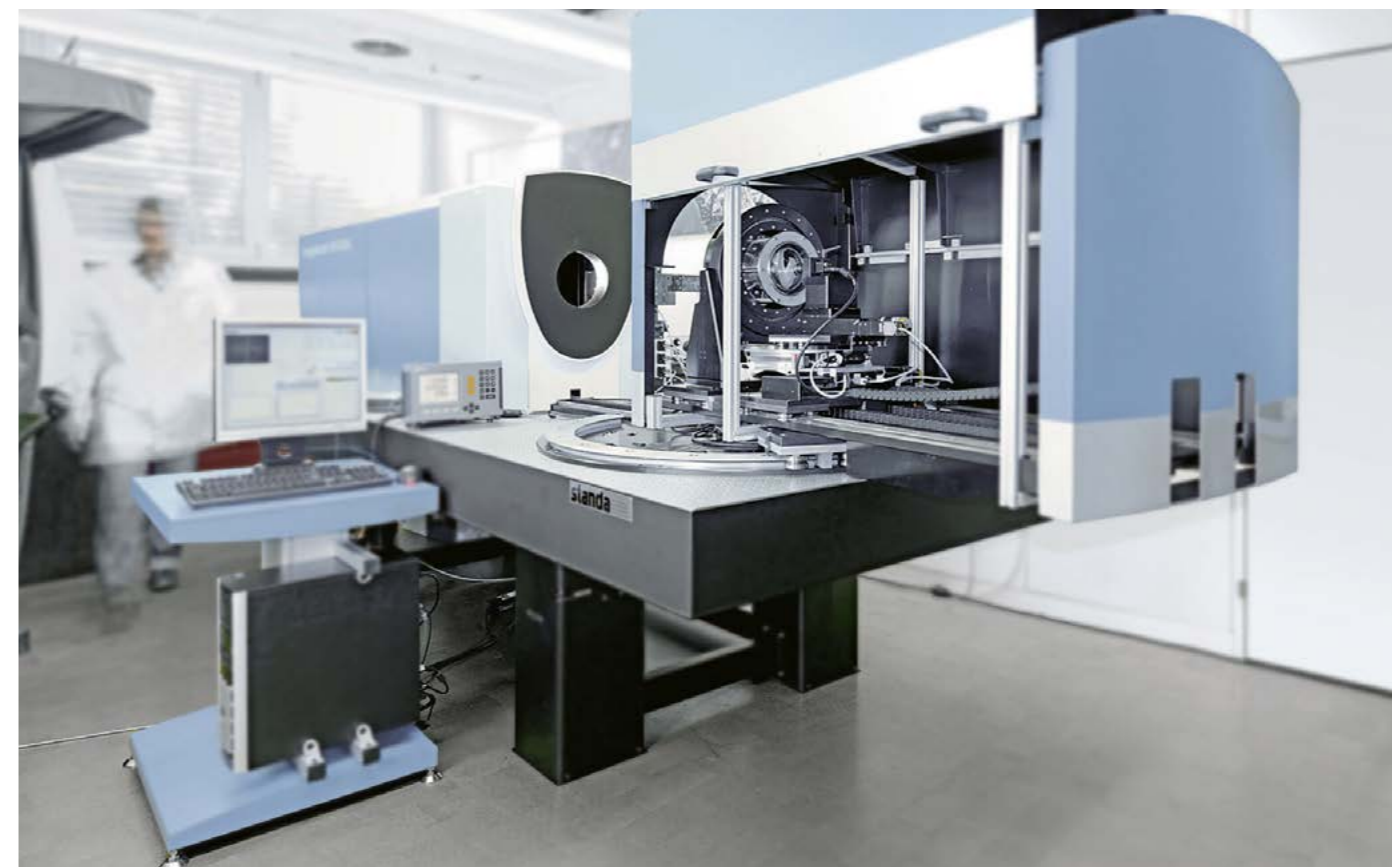
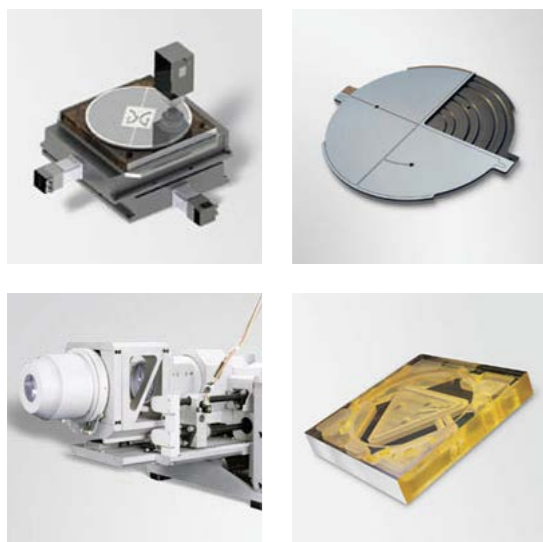
With customer-specific electrostatic and vacuum chucks, precise structural components and reference mirrors we ensure the highest yields in high-performance chip production. In addition, we offer opto-mechanical assemblies, opto-electronic systems, high-end lenses as well as stage modules. Our components and systems are employed in many areas of the semiconductor industry - lithography, inspection, 3D integration and wafer handling.

### We help design the future.

To accommodate a larger number of transistors on a chip, the structures have to be packed or to become even smaller. This will be possible, for example, thanks to EUV lithography. We are one of the suppliers driving this technology. To overcome the last hurdles, we support leading semiconductor suppliers with our know-how.

### Top quality thanks to top logistics.

Top logistical services are our daily business. Sometimes thousands of individual parts have to be procured and checked for a single product. Therefore, we also offer a wide range of complex systems - which provides a competitive advantage for us and our customers.



## METROLOGY. ACCURACY AND PRECISION - TO THE POINT.

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 lenses for aerial cameras, opto-mechanical assemblies for laser trackers, transceivers for 3D measurement systems and interior triple reflectors. We supply optical systems for innovative and laser-based metrology for exact determination of both angles and dimensions as well as 3D coordinates. But this is not the only way we measure our success.

### We always take a closer look.

Especially when it comes to understanding your application and requirements, we work just as accurately as our measuring technology.

### Problem understood, problem solved.

From design to model, from prototype to volume production - we offer you the complete value chain from a single source. And as a client you will of course be involved in the process right from the beginning.



## LASER TECHNOLOGY. BEAM EXPANSION AND BEAM SHAPING FOR LASER SYSTEMS.

The laser has become an indispensable tool in modern industry, research and communication. As an OEM supplier, we offer the right solution for your application. We are your reliable partner for the whole project, starting with the design, creation of prototypes and finally volume production.

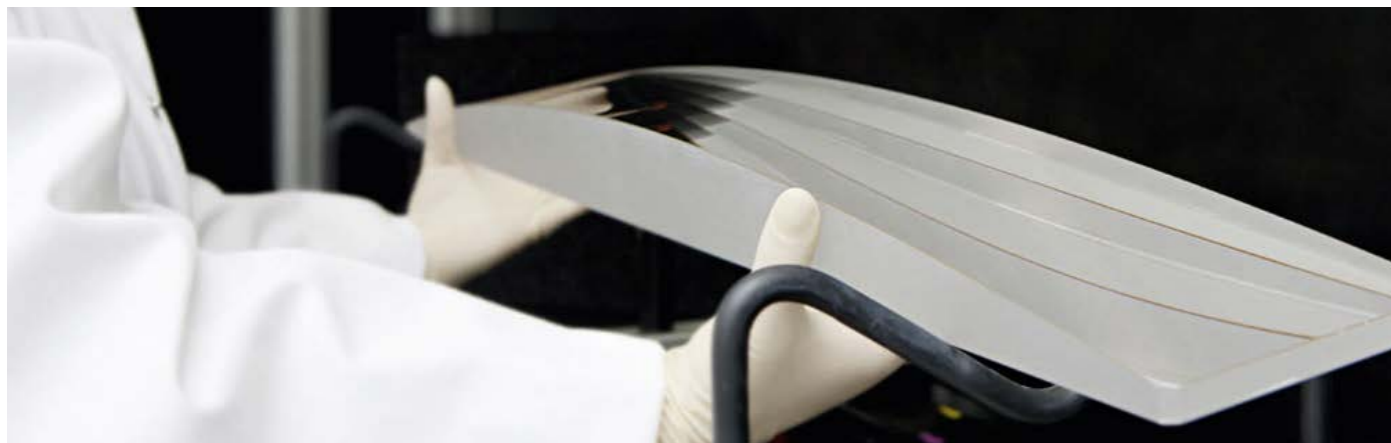
No matter whether for laser material processing, display manufacturing or the high-performance data transfer – leading manufacturers of laser systems benefit from our expertise and take advantage of our high-precision optical components, assemblies and systems for implementation of high performance in their respective applications.

In this way our high-precision, large cylindrical lenses and plane optics are used in laser annealing and laser lift-off processes for the production of AMOLED and flexible displays for smartphones, tablets, and TVs. Our customer-specific fiber end caps are essential components of fiber-based beam guiding systems for data transfer.

### Everything from a single source.

Our portfolio does not just cover the development and production of these key components. The services are rounded off by coating the optics as well as the assembly in frames for low-stress mounting of the optics. Measurement and documentation of your requirements are a matter of course.

We meet the highest tolerance requirements and provide you with a reliable quality even at high volumes.



## SPACE. LASER COMMUNICATION IN SPACE.

International OEM customers rely on our optical key components, assemblies and systems – even in space. There our components and systems, such as our space mirror, can withstand even the strongest cosmic radiation, shock and vibration stresses as well as major temperature fluctuations. This is made possible, among other things, through the anodic bonding of glass and glass ceramics to highly stable support materials – one of our core competencies.

### The Space Data Highway.

The Berliner Glas Group is involved in the building of the European Data Relay System (EDRS). This system will ensure that low-orbiting satellites will be able to send their information down to earth in near-real time. For this, satellites are equipped with laser communication terminals containing several optical components and systems manufactured by the Berliner Glas Group.

Optical communication allows enormously increasing amounts of data to be made available in a faster, more reliable way to customers for further use on earth. In order to exploit the advantages of data transmission with laser light, very sophisticated technologies have been developed and qualified for use in space.

### International supplier with space heritage.

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.

Since 2013 our components and systems have been successfully used within various missions in space and have shown an excellent performance. We are very proud to make a contribution to the building of the Space Data Highway.





## MEDICAL TECHNOLOGY. HEALTH IN A NEW LIGHT.

By developing and manufacturing optical, electronic and mechanical high-precision components, assemblies and systems we push reliable new systems in medical technology.

With our ISO 13485 certification we stay up to date on the evolving development and manufacturing requirements for medical technology and instrumentation.

We are partner for international medical device manufacturers from concept to volume production and help to accelerate their innovations and be first to market. Our range of OEM solutions is based on a broad technology portfolio, which is constantly being expanded and brought up to date. This enables the implementation of ideas on the edge of technical feasibility - within very short implementation times.

Our products and solutions can mainly be found in the healthcare market segments ophthalmology, dentistry and endoscopy as well as in the field of life sciences. High-quality optics and assemblies are included, for example, in systems of leading suppliers in ophthalmology. We also supply a 3D measuring camera to the world market leader for intraoral CAD/CAM systems.

### Highly qualified experts for every task.

The optical designers, system and design engineers, electricians and physicists have an excellent understanding of the specific requirements of the medical technology market, and develop competitive solutions in close cooperation with you - optimally tailored to your needs and requirements.



Source: Sirona Dental Systems GmbH



## TECHNICAL GLASS. WE MAKE INFORMATION VISIBLE.

Glass is one of man's oldest materials - and thanks to Berliner Glas the future belongs to glass, too! Our modern handling and refinement technologies turn glass into a versatile high-tech material, which is used in an increasing number of fields. For displays of PCs, navigation systems, medical equipment or industrial automation our technical glass fulfills several functions: On the one hand it provides protection and on the other hand it makes the devices even more powerful, for example, as a carrier of multitouch controls, and ensures a natural, high-contrast reproduction of colors.

### Perfectly combined refining techniques.

Berliner Glas has a chemical etching site which produces standard etchings with various defined glosses, as well as customer-specific etching structures. With our etching services we offer you finely structured and anti-glare glass, which we refine further for you. We laminate, coat, print, temper and shape glass with our CNC technology - in full accordance with your individual needs.

### From concept to volume production.

Berliner Glas prepares your display glass, including the desired level of assembly, in such a way that it can be easily integrated into your system, or inserts your design element straight into the provided housing. We support your ideas and their implementation from the first considerations. Benefit from our numerous solutions, the complex testing and measurement technology of the Berliner Glas Group and the wide range of manufacturing competence from one source - from concept to volume production of the mountable assembly.



# THE BERLINER GLAS GROUP AT A GLANCE. YOUR PARTNER FOR OEM SOLUTIONS.

The Berliner Glas Group is one of the world's leading providers of optical key components, assemblies and systems, high-quality refined technical glass as well as glass touch assemblies.

With its understanding of optical systems and optical production technology, the Berliner Glas Group develops, produces and integrates optics, mechanics and electronics into innovative system solutions for its customers. These solutions are used throughout the world in selected market segments of the light-using industries – the semiconductor industry, medical technology, laser and space technology, metrology and the display industry.

For its customers the Berliner Glas Group is a reliable, competent long-term partner along the entire process chain – from concept to volume production.

With its qualified and experienced employees the Berliner Glas Group develops and produces optical system solutions at five locations in Germany, Switzerland and China.

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