

High-precision mechanical engineering

Components

Surface treatment



Polymeca

Leica Geosystems AG, part of the Swedish technology group **Hexagon**, manufactures advanced mechanical components with maximum precision in Heerbrugg in eastern Switzerland under the brand name **Polymeca**. Customers include market and technology leaders from the optics, equipment manufacturing, measurement technology and mechanical engineering sectors.



In 1921 German engineer and inventor Heinrich Wild founded the «Workshop for Precision Engineering and Optics» in the Swiss town of Heerbrugg. Over the subsequent 100 years, under the names Wild Heerbrugg, Wild-Leitz, Leica and later Leica Geosystems, the company has become a leading supplier of measurement and digitalization devices. At the same time, the mechanical manufacturing department (Polymeca) has also established itself as a market leader in precision mechanical engineering for customers outside the Hexagon Group thanks to the in-depth expertise and many years of experience of its specialists.

Polymeca's value chain covers production engineering, turning, milling, hard turning, grinding, surface fin-

ishing, painting, measuring, assembly and testing. This means we are a **one-stop shop, which reduces logistics costs and simplifies the process** for the benefit of our customers.

Polymeca manufactures series components in three-shift operation with an ultra-high degree of precision and reliability using state-of-the-art, highly automated production facilities.

Our team of measurement specialists ensures not only that you get top quality products, but also that the manufacturing process is documented for you in a clearly understandable manner. The ISO 9001 and ISO 14001 certifications are more than a mere formality: they are binding and a deep-seated conviction for Polymeca.

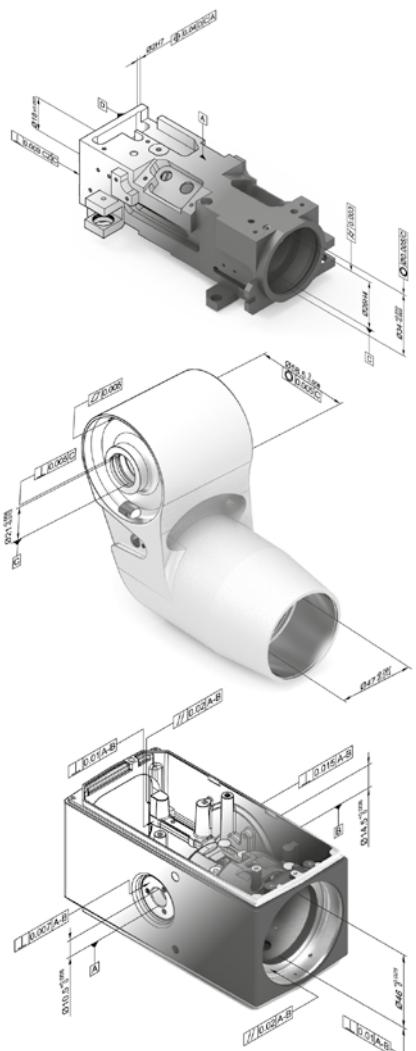
Every day 130 highly skilled individuals demonstrate their passion and commitment to this goal.



Polymeca headquarter: in the four-country corner between Germany, Austria, Switzerland and Liechtenstein

Our portfolio at a glance

Polymeca offers every sort of mechanical engineering service from a single source. We don't see ourselves merely as an outsourced workbench for mechanical parts, but as a manufacturing partner for leading companies that seek to maintain a long-term relationship with suppliers. Our aim is to understand your requirements and fulfill them with process and cost-optimized implementation. Our 100 years of experience in the manufacture of parts with micron accuracy and of demanding electro-mechanical precision components have made us specialists in apparatus engineering and precision mechanics.



What we can do for you

Precision engineering to your exact specifications

- Machining
- Turning and hard turning
- Cylindrical and match grinding
- Honing

State-of-the-art testing equipment

- Coordinate measurement
- Form and roundness testing
- Contour and roughness testing
- Coating thickness testing

Assembly

- Component assembly in a clean room (including ESD)
- Adjustments; function tests; durability tests
- Electrical, pneumatic and hydraulic testing
- Test stand design and fabrication

Procurement logistics

- Procurement of unambitious parts in low wage countries
- Sourcing of material and components
- Warehousing to your specifications

Surface finishing

Painting:

- Liquid and powder painting
- Smooth and textured painting
- Special effect and functional painting

Galvanic and chemical processes:

- Anodizing
- Nickel plating
- Chrome plating
- Copper plating
- SurTec 650

Additional processing:

- Powder- and sandblasting
- Vibratory grinding
- Ultrasound cleaning
- Laser marking, laser ablation

We can also provide other processes via our partners.



What makes us tick



Our daily challenges and decisions are based on our mission statement:

«We aim to be a complete precision-engineering provider whose quality, inventiveness and reliability make our customers both loyal and contented, and who thus maintain long term relationships with us.»

We accomplish this via the following

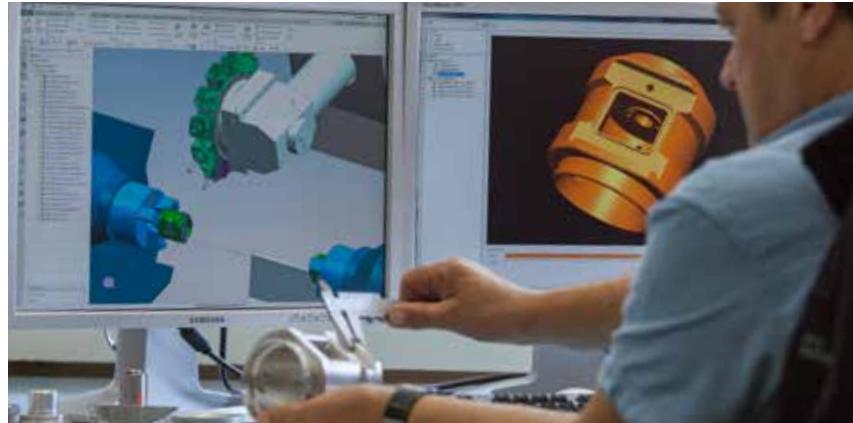
- Highly motivated workers with outstanding qualifications
- A strong focus on customer satisfaction
- High tech manufacturing and testing installations
- Automated feeding systems that allow for fully mechanized manufacturing
- Multiple shift models
- Continuously tweaking our processes to make them ever more efficient
- Proactive quality and environmental management
- A host of satisfied customers

Planned precision

Production engineering

Here at Polymeca, we help you translate your product concepts into top-notch solutions that get the job done. And in this process, we partner with you every step along the way. So it's best to contact us early on in your conceptualization process – or preferably even before it begins – so that you can derive maximum benefit from our extensive know-how.

Our design engineering practice is based on the principle – one we've found to be sound and reliable – that to create a successful solution you need to know where you're headed and how you intend to get there. To do this, we draw upon our extensive experience and the most advanced engineering technologies, which allow our specialists to devise solutions that meet your exact requirements.



And please note: these manufacturing experts will not rest until the component we're making for you looks exactly the way you want it to.

Project management

Our project managers plan and monitor the progress of your project from start to finish and also act as direct liaisons between you and your project coordinator and designer.

Our project managers work closely with you in a manner that assures transparency in terms of quality, technology and resources, and is also your guarantee (thanks to the use of modern means of communication) that changes and adjustments in your project will be clearly and promptly visible for all concerned. Thus all concerned receive the requisite project information in a timely manner.



The chips fly with us

Turning

Dimensions:

Parts produced from bars ranging from 6 to 100 mm in diameter

Parts up to a diameter of 315 mm produced in a chuck

Accuracy:

Tolerances: .005 mm

Roundness: < .002 mm

The production of turned components plays a central role at Polymeca. Whether from bars or machined in the chuck – we have automated our turning processes according to the latest techniques. Bar loaders and gantry loaders help us achieve nearly unmanned production of even demanding turned components, which saves costs.

For the highest possible process reliability, we employ high-tech machinery that performs entire processes. This reduces the number of process steps and the risk of reclamping errors.

Production facilities with stable temperatures provide consistent manufacturing conditions.



Milling

Dimensions:

630 mm x 630 mm x 650 mm

Accuracy:

Tolerances: .01 mm to .04 mm

For milling we use nothing but state-of-the-art 5-axis milling machines with HSC (High Speed Cutting) spindles. This technology used for block material, is often a more cost-effective alternative to casting. The key advantages of processing block materials are:

- Initial samples and batches are available more quickly
- Low initial costs (no casting molds are required)
- Changes can be made more quickly and cost-effectively
- No need to align the casting in the milling machine (robots can be used)

To ensure consistently high quality, we manufacture our products in a temperature-controlled environment and use machine tools with optional high-precision package.



Ground and proven quality



Grinding

Dimensions:

Outer diameter < 400 mm;

length < 400 mm

Inner diameter < 300 mm;

length < 200 mm

Accuracy:

Roundness: < .0003 mm

Cylindricity: < .001 mm

Tolerances: .002 mm

Fit tolerances: .001 mm

Polymeca has grinding expertise that meets the highest quality requirements.

In addition to dimensionally accurate cylindrical grinding and honing, Polymeca's precision machining processes include shoe grinding and pair grinding. In the latter case, the outside diameters of the parts to be paired are matched with micrometer precision to the inner diameter of the counterparts. State-of-the-art, fully automatic grinding cells ensure the process reliability across all process steps, even in unmanned 24-hour operation. Trend analyses enable continuous process optimization and the temperature conditioned environment lasting quality.



Quality inspection

Coordinate measuring machines

Dimensions:

1,500 mm x 1,000 mm x 700 mm

Accuracy: 1.0 µm + L / 400 mm

Form tester

Dimensions:

350 mm in diameter x 300 mm in height

Accuracy:

Roundness dev. < 0.1 µm

Straightness dev. 0.25 µm/100 mm

Polymeca has outstanding expertise when it comes to quality certification and continuous optimization of manufacturing processes, using various coordinate measurement devices, form, contour and roughness testers, and also gage testing equipment.

Initial batches are put through their paces in the climate-controlled measurement lab and documented in a first article test report (FAI). Once Quality Management gives its approval for production, the process is monitored in close cooperation with the QM team at the production facilities themselves. Production staff have round-the-clock access to a versatile integrated 3D measurement center fed by pallets.

Surface finishing

Surface treatment

Our in-house surface treatment simplifies matters and keeps the supply chain as short as possible. Polymeca handles everything when it comes to manufacturing your complex components, including surface finishing.

Whether it's pre-treating components, painting, anodizing, applying galvanizing or chemical coatings, or post-treatment with printing or laser machining, we've got everything covered.

We are firmly committed to complying with all environmental regulations and the RoHS and REACH directives. Our unwavering commitment to environmental stewardship is also underscored by our ISO 14001 certification.



Chemical and galvanic processes

- Anodizing (colorless or dyed)
- Aluminum passivation, Cr VI-free
- Chemical bluing for brass
- Stainless steel passivation
- Bronzing steel and stainless steel
- Shiny nickel, shiny chrome
- Nickel plating (chemical, galvanic)
- Black chrome plating
- Copper plating
- Chemical deburring (Fe, Cu, Ms)
- Pad galvanization

Painting processes

- Liquid painting
- Powder painting
- Special effect painting

Additional processing

- Powder- and sandblasting
- Vibratory grinding
- Tampon printing, screen printing
- Partial covering
- Laser marking
- Laser ablation (anodized layers or paint)



Mounted and tested



Component assembly

The highly skilled experts in our component assembly department ensure your products are made with consistently high quality. We work closely alongside our customers to assemble the components in accordance with the instructions, drawings or samples, ensure specific purity standards are met, and conduct customer-specific functional tests to guarantee a flawless final product. We make use of our global procurement organization when purchasing the parts we need.



We assemble **mechanical, electromechanical and optical components** and possess in-depth expertise in

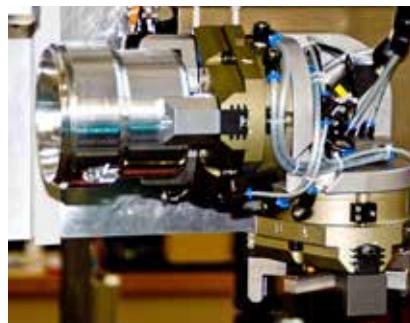
- Adhesive technology
- ESD-protected assembly
- Electrical testing
- Power and flow measurement
- Leak testing

For outstanding availability

Automation and maintenance

We keep our production installations in tip top condition thanks to highly qualified technicians. We also offer this same maintenance service to external companies. At Polymeca, we use automation to make our employees' tasks easier, but not to replace our employees with machines. We make every effort to ensure that our employees (a) are used in the most productive and sensible manner possible; and (b) that they are not required to carry out monotonous tasks. A team of specialists transforms our workers' suggestions and insights into cost saving solutions on an ongoing basis. This approach enables us to build specialized machines in a highly flexible manner with a focus on automation.

In developing automation solutions, our emphasis is on improving efficiency, processes, and safety, while also expanding our production capacity.



Our portfolio

- Project management in mechanical engineering and automation projects
- Control system development and fabrication
- Control cabinet fabrication to your specifications
- PLC programming
- Process visualization
- Design and manufacture of specialized machines
- Machine revision
- Planning and implementation of pneumatic and hydraulic solutions
- 3D CAD design



Focusing on «time to market»



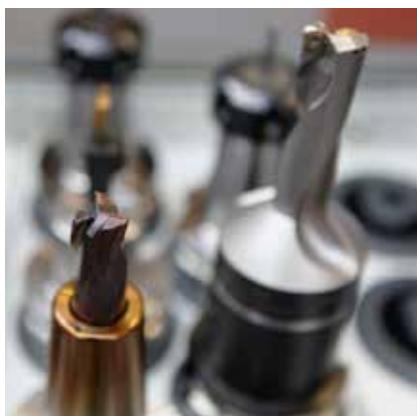
Prototype fabrication

**Express and individual-part production,
fixture design and manufacturing**

And if you happen to be in a hurry...

Every day counts when it comes to development projects and manufacturing samples and production aids. Our flexible and highly qualified team of manufacturing specialists in prototype manufacturing will work quickly to transform your ideas and sketches into real components.

The prototype team will use state-of-the-art programming tools and high-performance machinery to make this happen, and any manufacturing processes not offered by Polymeca will be arranged with external partners or material suppliers.





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PASSION FOR PRECISION