Precision and Innovation

MOELLER-WEDEL OPTICAL GmbH concentrates on the research, development, production and sales of high-precision optical test equipment and precision optical components.

Exclusively targeting industrial measuring technology, MOELLER-WEDEL OPTICAL GmbH offers the largest range of visual and electronic autocollimators, providing an accuracy of up to 0.01 arc seconds, for measuring straightness, flatness, and positioning accuracy of index tables in the machine tool industry.

For the optical industry MOELLER-WEDEL OPTICAL GmbH offers interferometers for shape testing, goniometers, goniometer - spectrometer, visual and electronic autocollimators, collimators, testing telescopes, diopter telescopes, and measuring devices for optical systems (focal length), prism binoculars, cameras, and zoom lenses.


Services such as the calibration of MOELLER measuring instruments or training courses complete the range of products offered by MOELLER-WEDEL OPTICAL GmbH.

ELCOMAT HR

The electronic autocollimator ELCOMAT HR is the most accurate, commercially available electronic autocollimator in the world. It is used by many national metrology institutes as the reference instrument for calibration of electronic autocollimators, high precision round/index tables and polygons. The dual axis autocollimator offers an accuracy up-to ±0.01 arcsec and has a measuring range of ±150 arcsec.

ELCOMAT 3000

The electronic autocollimator ELCOMAT 3000 is designed for extremely precise alignment and angular measurements over working distances up to 25 m. It offers 0.001 arcsec resolution (0.005 µm/m) and accuracy of 0.1 arcsec (0.5 µm/m). The measuring range of the autocollimator is 2000 arcsec (10mm/m).

The autocollimator is designed for industrial applications requiring precision angular measurements, such as may be required in critical optical and mechanical alignments. The following measuring tasks can be performed with the ELCOMAT family of autocollimators quickly even under workshop conditions:

- flatness measurement of surface plates,
- pitch and yaw measurements of machine guideways,
- squareness and parallelism of guideways,
- determination of position uncertainty of indexing tables.

For each of these applications special WINDOWS™-based software is available. As a manufacturer of optical test equipment MÖLLER-WEDEL OPTICAL GmbH offers all needed accessories such as holders and fixtures, quick alignment tools, mirrors, prisms and polygons.

ELCOMAT direct

The electronic autocollimator of the ELCOMAT direct product line consists of an autocollimation sensor and the evaluation software ELCOdirect.

The main features are:

- Connection to PC via USB 2.0 port
- PC-based evaluation
- Easy to use
- Direct measurement of tilt and wedge angle
- Low cost system
- Wide range of focal lengths available to match needs of measuring range and accuracy.
MELOS 530
The measuring combination for lenses and optical systems MELOS 530 from MOELLER-WEDEL OPTICAL is a universal test- and measurement tool in quality control for optical production and vendor inspection. It allows the measurement of positive and negative focal length, back focal length, convex and concave radii as well as interferometric shape measurement of plane and spherical surfaces. In addition, the testing of planar wedge angles and parallelism is simple. Upon request, a solution is available for the measurement of surfaces with smaller focal lengths and/or back focal lengths. The MELOS 530 is available in different configurations depending on the required measurement modes. Each configuration contains all necessary accessories.

VI-direct Interferometers
Interferometers are an indispensable measurement tool in optical production and quality control. They are used for a wide variety of applications. Examples are testing of flatness and sphericity of optical surfaces, radius measurement and the testing of the wavefront distortion of optical systems. The Fizeau-type Interferometer of the VI-direct series are using a fibre coupled HeNe-Laser (λ = 633 nm) or a stabilized laser diode (λ = 635 nm). The modular conception allows combination with the objective tubes of our line of autocollimator products. Thus, a test field diameter of 10, 16, 28, 50 and 100 mm can be realized, depending on the chosen objective tube. The use of high resolution digital camera with USB connection expands the measuring range. The interferometer line is usable in vertical, horizontal or oblique orientations. This makes the instrument extremely versatile for use in customer specific applications.

CIFOS 800
The measuring station CIFOS 800 is the ideal instrument for optically controlled cementing and for measurement of centration errors of lenses and optical systems. In particular, the process “Fast Cementing” has been developed for production requirements. It offers an easy and efficient method for cementing of objectives. With the process “Centration Measurement” all typical centration measurement tasks can be carried out as well as final testing of the cementing results.

The MICRO-INTERFEROMETER VI-direct completes the interferometer direct line. This device extends the testing range of plane optics to very small diameters. The interferometer is designed to perform flatness measurement of plane optics with diameters between 0.8 mm and 3.6 mm. This cost-effective device is used for testing of the smallest components such as micro prisms, laser crystals, optical fibre ends, etc.

GONIOMAT A/A-HR
The GONIOMAT A/A-HR is a highly automated ultra-precision goniometer for automatically measuring angles of flat optical components reliably, quickly and easily. Driven by a stepping motor its measurement table is floating on an air cushion allowing for very accurate measurements of pyramidal angles. The device is able to separate and select the relevant autocollimation image in cases where multiple reflected images are caused by the prism’s geometry. This is achieved by an intelligent evaluation of the measured data utilizing 3D ray-tracing algorithms which is also able to validate the measurement. This guarantees the most reliable results. Since the device is equipped with the same user-friendly software as the GONIOMAT M it is just as easy to operate even by untrained personnel. The device can be ordered as either the plain A version or as the more accurate A-HR (High Resolution) variant (accuracy up to 0.4”).
SIAM
The Secondary Image Angle Measurement System SIAM measures the angular separation of the secondary image from the primary image through car windshields. The measurement is carried out according to the Regulation No. 43 of the UN/ECE. The instrument uses a laser for simulating the oncoming car head lights. Due to the small laser spot the instrument can also measure in areas like the camera window where the curvature, and thus the secondary image angle, varies strongly with the lateral position. The detection of the images is done by a telescope with attached camera. This makes the measurement independent of the distance between windshield and detection system. The determination of the secondary image angle is carried out fully automatically by image evaluation software in real-time at 25 Hz. The double image angle measurement results can be recorded in a protocol for documentation. Moreover the real-time measurement results can be transmitted over network via the UDP-protocol for integrating the SIAM into an external measurement set-up.

MIKROP AG – your supplier for miniaturized quality optics
As a worldwide leader in technology Mikrop offers high-precision optical systems in the field of miniaturized medical devices. Since 35 years, we develop, manufacture and mount highly complex, miniaturized optical components and assemblies. Mikrop is one of only few companies worldwide to manufacture high precision lenses and assemblies starting at diameters of just 0.30 mm.

Mikrop is the source for Swiss precision miniature optics serving all high-tech markets. Our lenses, objectives and optics are amongst the smallest imaging devices in the world.

Our Products and Services Include
Integrated Complete Solutions: Optical and mechanical design, production of prototypes, serial production and assembly

Optical Assemblies: Multi-element assemblies comprising lenses, prisms and housings, cemented compact optical groups

Spherical Lenses: All types of single lenses, doublets and triplets, rod lenses, miniaturized lenses, lenses with conical edge

Mechanical: Lens housings, precision assemblies, optical mounts

Off the shelf Products
Standard Micro Objectives: for different camera formats from 1/2 inch down to 1/10 inch or even smaller, with different Field-Of-View’s from narrow to wide fields

For Customers and Applications in:
- Endoscopy
- Medical Engineering
- Automotive
- Machine Vision
- Micro Sensors
- Micro Imaging