

PRECISION OPTICS ASSEMBLIES

TECHNOLOGIES AND PROCESSES BUILT TO WORK



HISTORY

50 YEARS OF PRECISION OPTICS



A leader for over 50 years in the high precision optics field
Located in Switzerland's Rhine Valley

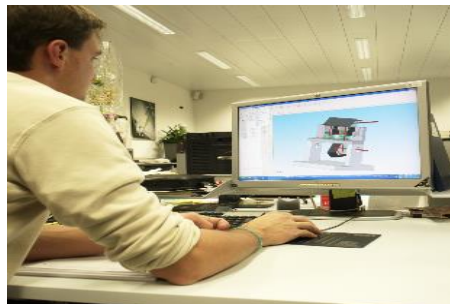
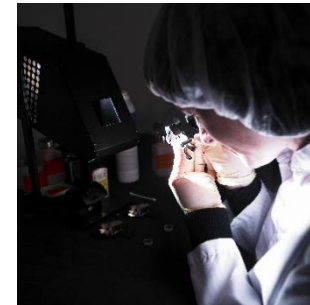


TECHNOLOGY

OPTICS MANUFACTURING

Optimum accuracy is guaranteed via optical contacting -- the basis for all our processes.

With 50 years of consistent innovation under our belt, we're one of the world's leading optics manufacturers.

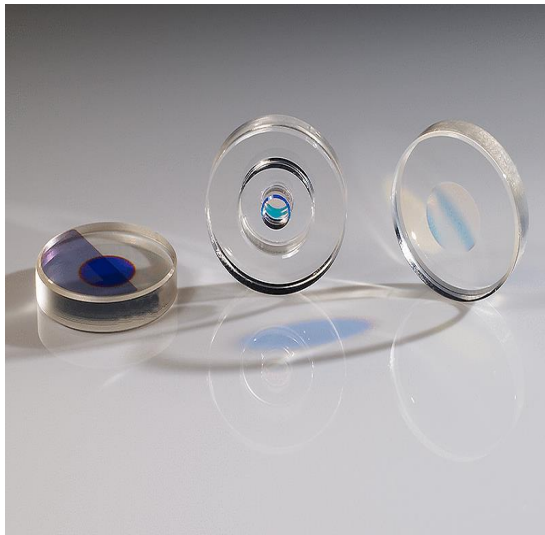


TECHNOLOGY

SUPER POLISHING

Super polishing means polishing micro-roughness down to sub-angstrom level RMS. ($< 1\text{\AA}$)

Continuous process improvement is what maintains our market leadership.

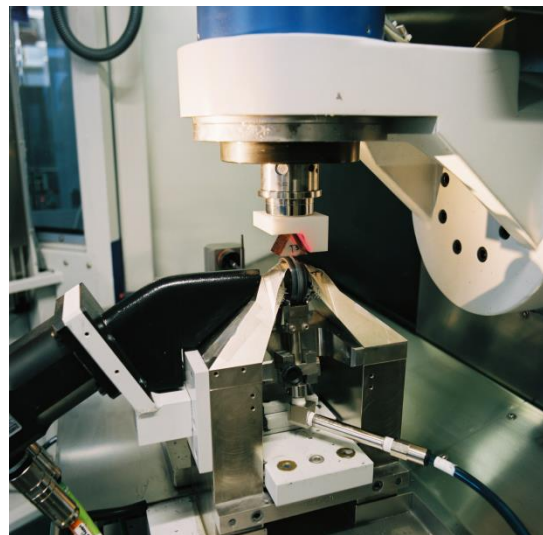
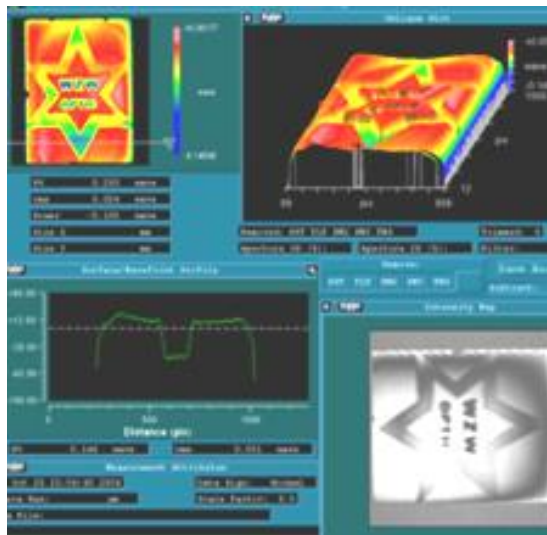


TECHNOLOGY

MRF

Cutting-edge surface correction: flat, spherical and aspherical.

- Wavefront corrections up to $\lambda/50$
- Angle correction within 0.1 arc sec accuracy

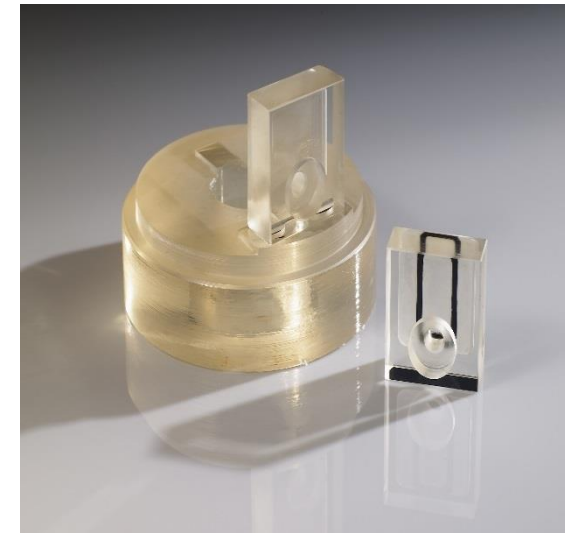
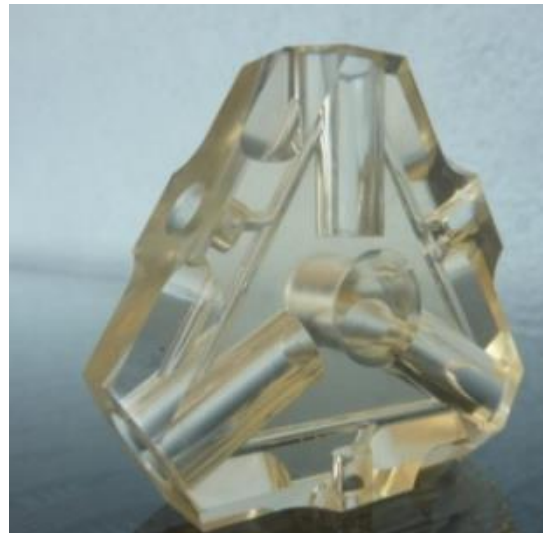


TECHNOLOGY

CNC

We've developed methodologies and tools for CAD-CAM analysis specific to geometric modeling and CNC manufacturing in glass and similar materials.

With **WZWOPTICAG**, the options for freeform shaping are virtually limitless.



METROLOGY

WE MEASURE WHAT WE MANUFACTURE

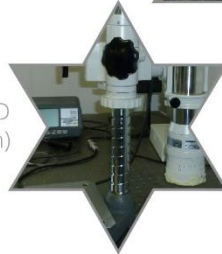
Perkin Elmer Lambda 900 (Coating Transmission)

Digital Autocollimator
(Deviation, angle)



Olympus LEXT
(Texture)

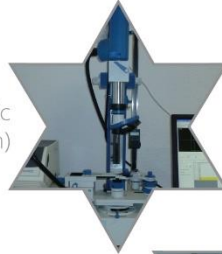
Nikon 6D
(Parallelism)



WZW Centrixx
(Flat radii)

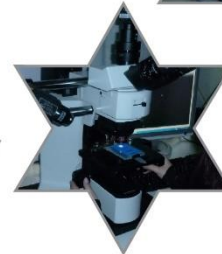


Trioptic
(Centration)

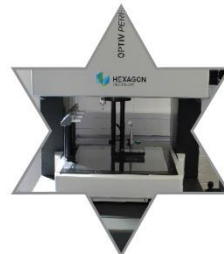


Zygo 900
(Flatness, wavefront)

Zygo NewView 6300
(Roughness)



WZW Streuli
(Scattering Inspection)

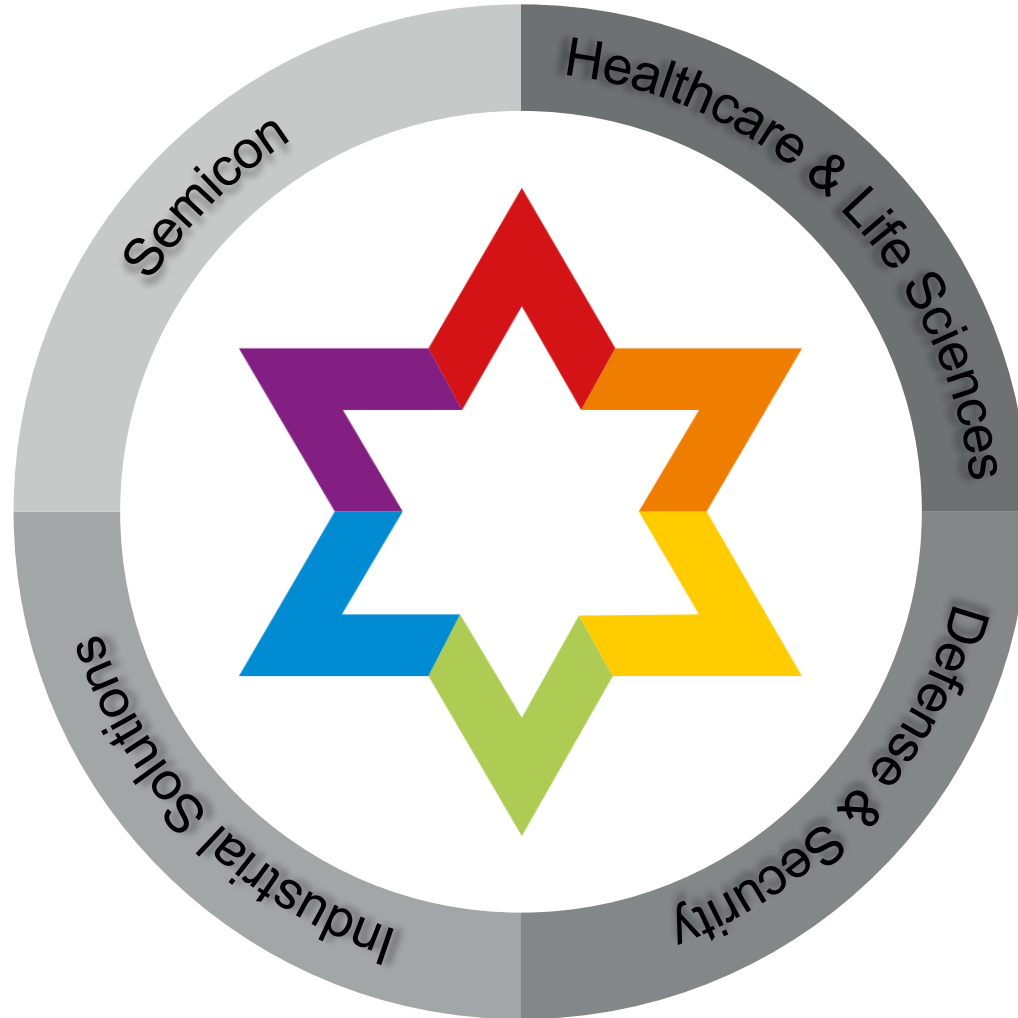


Hexagon Optive Performance 443



MARKETS

SATISFYING OUR CUSTOMERS' DIVERSE MARKETS



OUR PRODUCT RANGE

WZW POSSESSES BROAD EXPERTISE



SUPER POLISHING



OPTICS FROM DUV TO IR



ASSEMBLIES & SYSTEMS



MICRO OPTICS



ENGINEERING



COATINGS



SUPER POLISHING

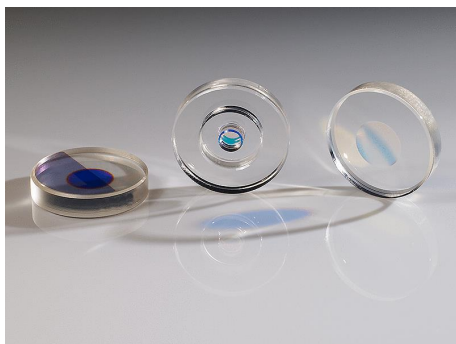
EXCEEDING YOUR EXPECTATIONS



SUPER POLISHING

WZWOPTICAG is Europe and Asia's only commercial manufacturer of super-polished surfaces. A roughness of less than 1 Angström RMS on plano and radii surfaces is necessary to achieve laser mirrors with minimal scattered light.

Such precision requires vast experience - and **WZWOPTICAG** has it.



SUPER POLISHING

LOW SCATTER OPTICS



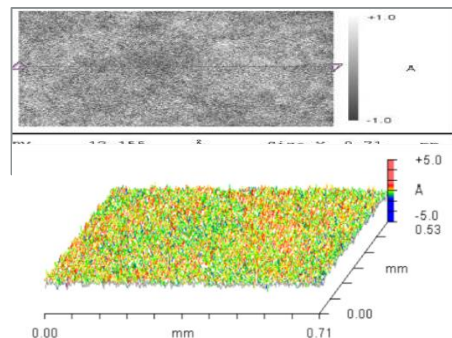
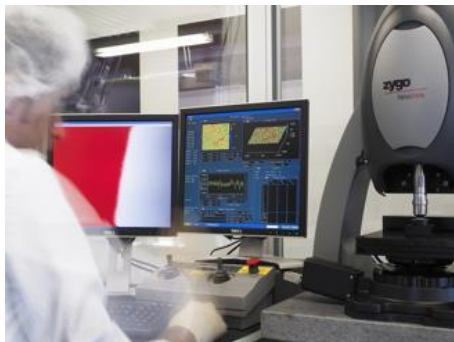
SUPER POLISHING

Capabilities:

Roughness: < 1 Angström RMS
Parallelism: < 1 arc sec
Surface figure: < $\lambda/20$
Plano and spherical surfaces

Markets:

Laser applications
Low scatter optics
Laser cavities





OPTICS FROM DUV (193NM) TO IR

The Defense and Avionics markets form part of our largest business domain. Our expertise includes target designation and range-finding used in land-based and airborne systems.





OPTICS FROM DUV (193NM) TO IR

Size: 0.3 - 450 mm
Angle tolerance: <0.5 arc sec
Thickness tolerance: $\pm 0.2\mu\text{m}$

- Mask and wafer inspection optics
- In-cavity and ex-cavity optics



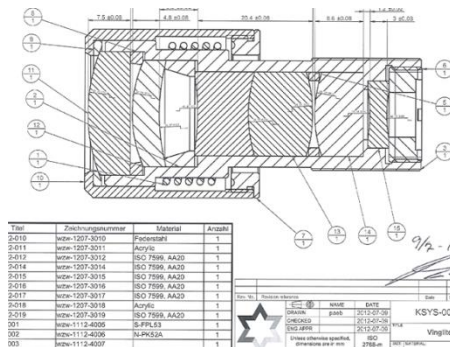
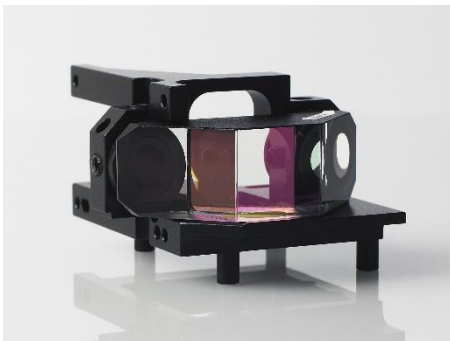
ASSEMBLIES & SYSTEMS

FROM INITIAL CONCEPT TO FINISHED PRODUCT



ASSEMBLIES & SYSTEMS

Our Balgach facility houses specialists with the expertise required to calculate, design, and manufacture your assemblies. Our team will assist you with analytical, modeling, and simulation layouts that prove feasibility.



ASSEMBLIES & SYSTEMS

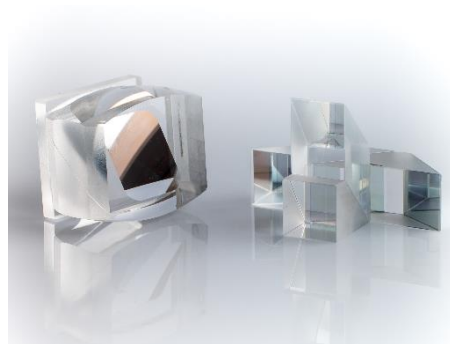
CUSTOMIZED ASSEMBLIES



ASSEMBLIES & SYSTEMS

Mechanical alignment: ≤ 0.001 mm
Optical alignment: ≤ 1 arc sec
Beam Deviation

Multiple Element Assemblies - Glass to
Glass Bonding
Custom Assemblies
Laser Marking and Etching
MTF Measurements



MICRO OPTICS

SMALL ITEMS, BIG EXPERTISE



MICRO OPTICS

We provide **OEM** solutions for optics-infused diagnostic and surgical instruments. From simple components and small assemblies to micro optics parts, prisms, and prism/lens assemblies - we do it all!



MICRO OPTICS

MICRO OPTICAL COMPONENTS AND SYSTEMS



MICRO OPTICS

Dimension down to 0.3 mm

Prisms, Windows, Lenses, Rod
Lenses, and Filters available in single-
element or assemblies

Surface quality according to ISO 10110

Angular Tolerance : +/- 1 arc sec

Dimensional Tolerance: +/-0.0005

Flatness: $\lambda/50$



ENGINEERING

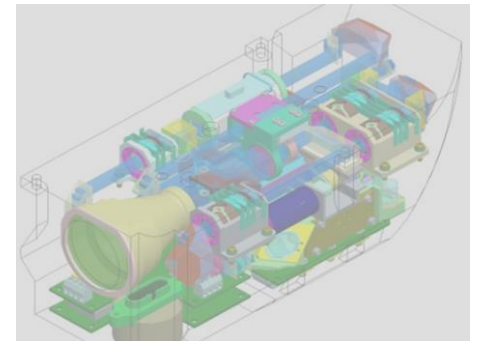
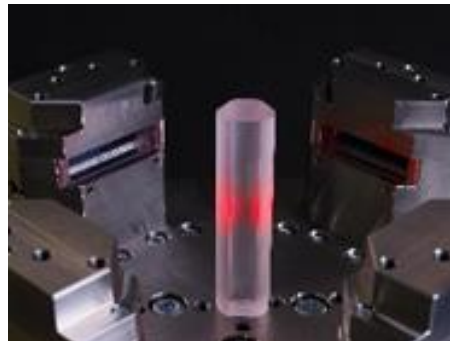
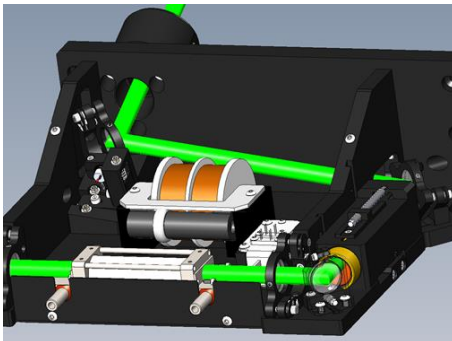
NO DETAIL IS TOO SMALL



ENGINEERING

We're adept at developing new solutions for our customers, and optimizing existing systems.

From the optical design of opto-mechanical systems to development, manufacturing, and measuring, we offer unrivaled competence and professionalism.





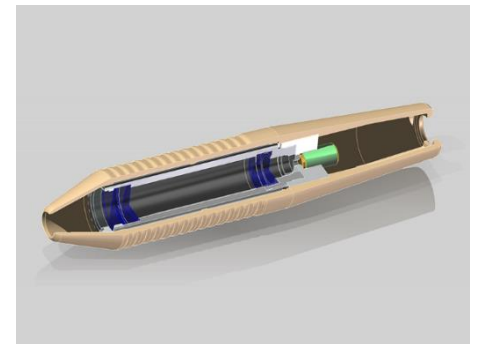
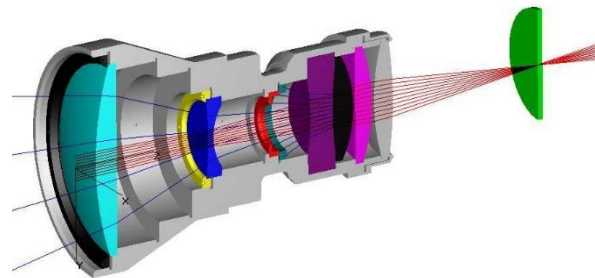
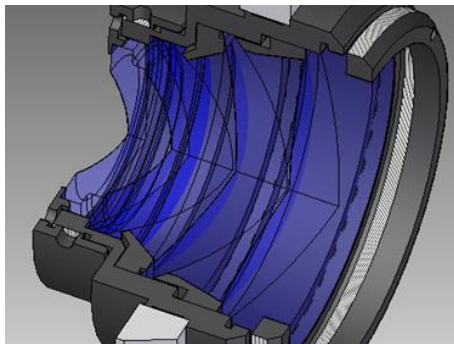
ENGINEERING

Capabilities:

ZEMAX
SOLID EDGE
FTG Filmstar

Markets:

Opto-mechanical design
Feasibility studies
Technical support



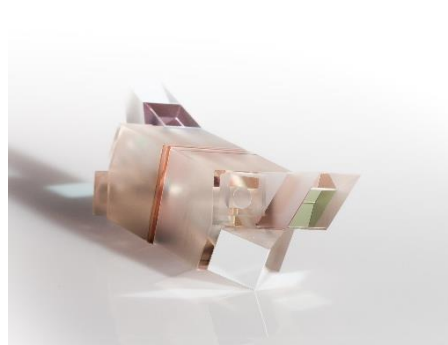
COATINGS

OUR CLIENTS GET THE VERY BEST



COATINGS

High-performance coatings for high-precision optics. Our global network of leading optical coating suppliers helps us find the best solution. Nobody's more flexible than WZW!





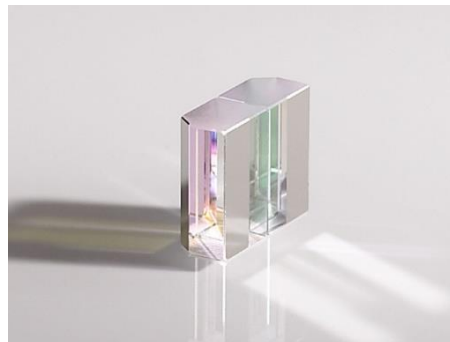
COATINGS

Types:

- Extreme Low-Loss HR $R > 99.999\%$
- AR, Shortpass, Longpass, Bandpass
- Protected Metal (Al, Ag, Au, Cr)
- Specialities, i.e. black coatings

Technologies:

- IBS Sputtering
- MSP Magnetron Sputtering
- IAD Ion-Assisted Deposition
- E-Beam Evaporation Deposition

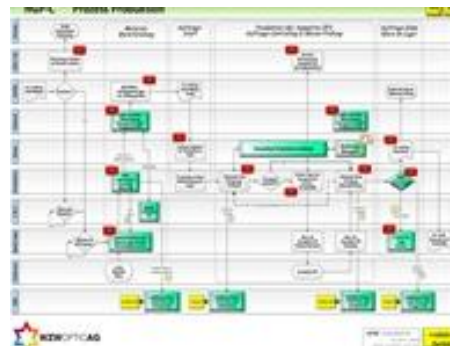


QUALITY ASSURANCE

QUALITY: THE FOUNDATION FOR OUR CUSTOMERS' SUCCESS

To ensure sustainability and growth, WZW regularly invests in quality control and quality assurance. Both are key contributors to our continued success, and that of our partners.

Our ISO 9001 certification was performed by SQS Switzerland.



QUALITY ASSURANCE

QUALITY: IT'S WHAT WE DO

Comprehensive Operations Plan

Datum: 03.07.2014 Produktionsauftrag EASYPROD V4.9

Interne Order-Nr.

Interne Auftrag: 27572

Kundentermin : 11.09.2014 KW 37/2014 SOLL-Menge : 100 Stk
Bestellmenge Kunde : 55 Stk

Artikel-Nr.: SOT3039.5 Bestell-Nr.: 1407-013 Pos. 1
Bezeichnung: Corner Cube 21mm Uncoated Material: Infrasil 301
Zeichnungs-Nr.: wzw-1006-2033 / 01 Kunden-Nr.: 7386
Bemerkung: Lagerhaltungstyp: 2
AVOR/Disp.: M. Straub

Zusätzliche Bestellmenge des Kunden:

Pos.	Abl.	Operationstext	Operationstext 2	VK-Zeit	Visum
10	Z	Materialdaten	Operationsplan zuletzt geändert am: 02.07.14 mast		0:10
Materialdaten zusammenstellen					
- Schwellnummer:					
- Lieferart:					
- Material:					
20	VS	Roiform herstellen	gemäss Tippblatt wzw-1006-2033-TB01 30.05 ±0.05 x 13.77 ±0.05 x 125 (gibt 60 Stück) je nach Material ev. kürzer streifen winkel auf Z einschleifen bis mit 400er		6:06:40
30	Z	Masse	Sollmass: 30.05mm ±0.05 Istmassenrag: Sollmass: 125 Istmassenrag: Sollmass: 13.77 mm ±0.05		0:05

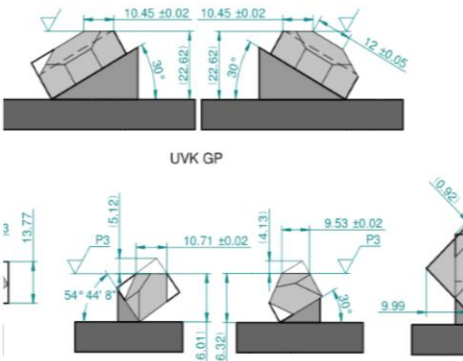
Bemerkungen: _____

EK durch: _____ Anzahl gute: _____ Korrekturen: _____ An Lager gut: nb: _____ be: _____
ED nach B: _____ Anzahl gute: _____ Korrekturen: _____ Korr: nb: _____ be: _____

Erstellung/Prüfung/Freigabe	GP	Abschluss	nicht kontr.	nb	be
Dat.:	Dat.:	Dat.:	Dat.:	Dat.:	Dat.:
Vis.:	Vis.:	Vis.:	Vis.:	Vis.:	Vis.:

Produktionsauftrag Seite 1

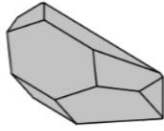

Manufacturing Schematics



UVK GP

UVK

Ansprengen 54° 44' 8"


Rev. No.	Revision reference	NAME
		DRAWN: paeb
		CHECKED: paeb
		ENG APPR: paeb

Unless otherwise specific dimensions are in mm

WZWOPTICAG

Detailed Assembly Instructions

Montageplan Objektiv 2 gefasst
Tipp-Blatt für 902939



1. Allgemeine Informationen

- Das Tragen von Handschuhen oder Fingerlingen ist Pflicht.
- Verpackung als Einzeileit mit Vectronix Label

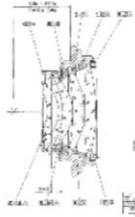
2. EGK

Linien nach Standardablauf Eingangskontrolle FC-08-12

Mechanik
Vor der Prüfung der Mechanik muss sie gereinigt und in saubere wzw Behälter gelegt werden.
Reinigen mit Sprit

3. Montage

- Linse prüfen und reinigen
- Klebestelle der Mechanik mit **Lackfrass** reinigen
- Linse 902838 mit APM 412072 oder APM 412097 in die Fassung 903134 einkleben
→ Kleber nach Datenblatt aushärten, bevor weiter montiert wird!
- O-Ring muss an die Mechanik angepasst werden (dehnen). Danach wie auf der Zeichnung einlegen.

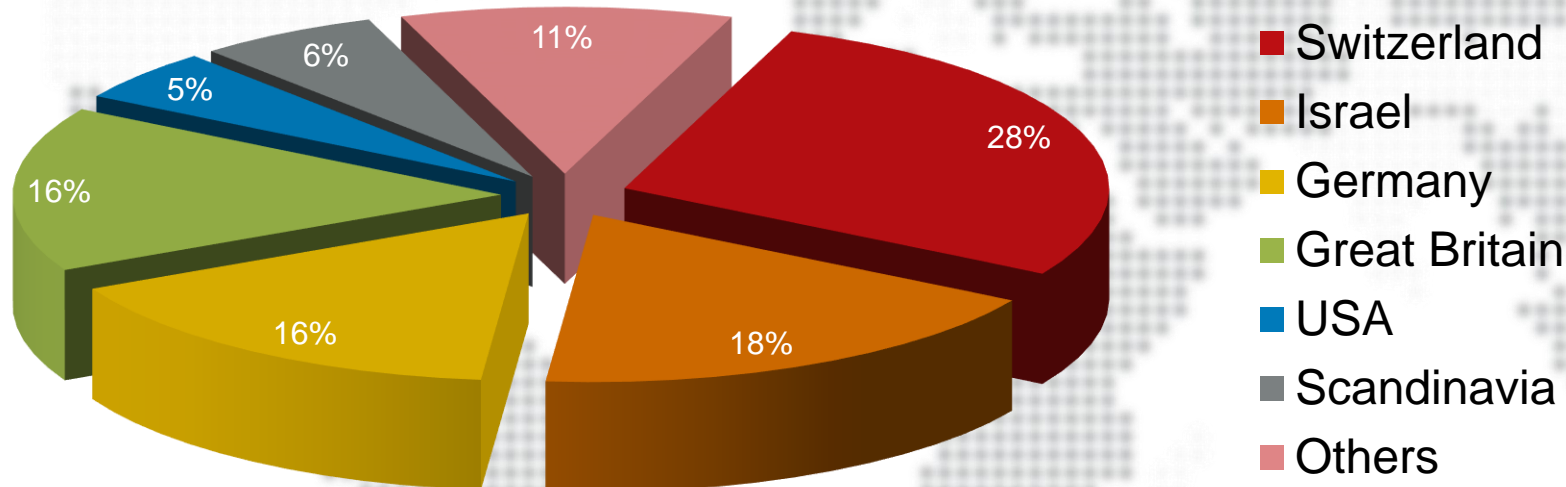


Beispiel: 14.96 Ø LE
-4.00
10.96 / 2 = 5.48

Der Linsendurchmesser minus 4mm (der Stift von der Messuhr) durch 2 geteilt, ergibt das **Mass**, der jeweiligen **Endmasse**, die für die Ausrichtung der Messuhr benötigt werden!

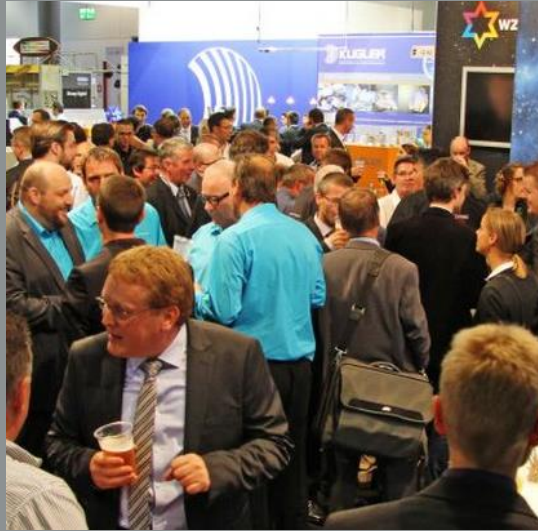
ACTIVE IN 42 COUNTRIES

WE'RE GLOBAL!



WZW SPIRIT

TEAMWORK ON DISPLAY



PARTNERSHIP
PROUD
IDENTIFICATION
FAIRNESS
TRUST
QUALITY
INNOVATION
FLEXIBILITY
RELIABILITY



CUSTOMERS ALWAYS WELCOME

OUR HEADQUARTERS IS EXCITING AND INVITING



