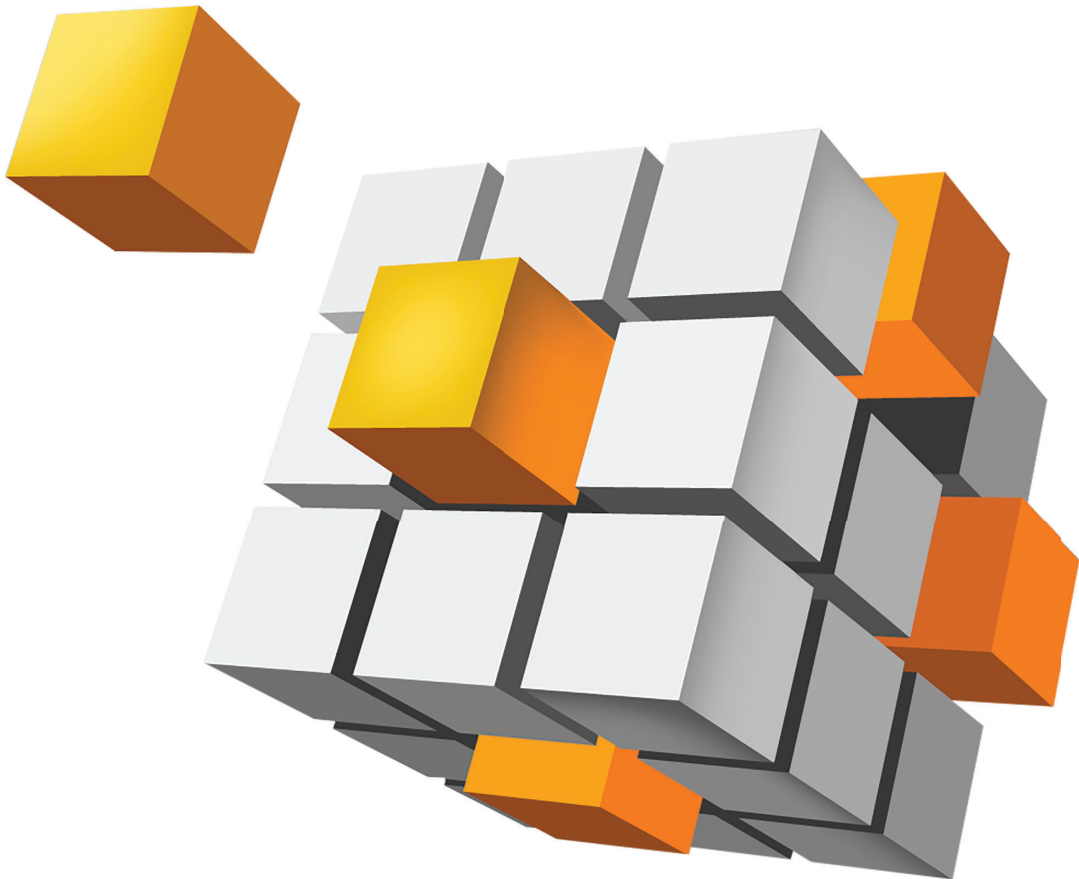


**WYLER**

# wylerSPEC

Smart - Powerful - Exact - Comprehensive



Intuitive - Flexible - Modular - Multifaceted

Software by WYLER AG - developed for you!

## WYLER AG

Inclination measuring systems

Im Holderli 13, CH - 8405 Winterthur (Switzerland)  
+41 (0)52 233 66 66  
wyler@wylerag.com  
www.wyler.com



## wylerSPEC - for your geometric measurement applications

The software wylerSPEC stands out through ...

- User friendliness
- Support for various languages
- Straight interpretation of results
- Adaptability to your measuring tasks
- Modular design
- Efficiency - time can be saved thanks to simultaneous measurements of multiple axis and parameters
- Integration of laser interferometers and autocollimators



Efficient measurement of machine tools ...

- For increasing quality requirements
- For high-precision machines

Since the early 1980's WYLER AG has been supplying software to execute this very task easily, quickly and precisely.



Thanks to the user-friendliness and informative display of readings, it is easy to set up, calibrate, and measure machines.

The integration of laser interferometers and autocollimators makes it possible to record all the desired parameters of a machine with a single software solution.



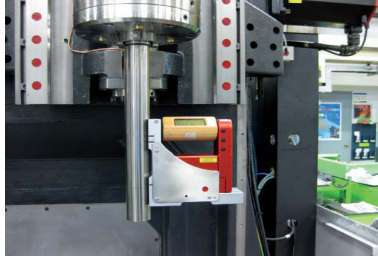
# wylerSPEC - fingerprint

## The ideal software for assessing your machines

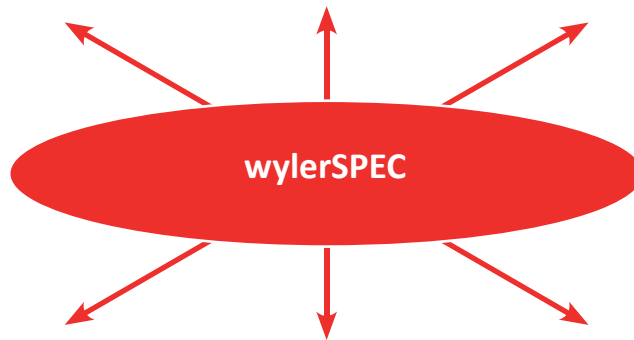
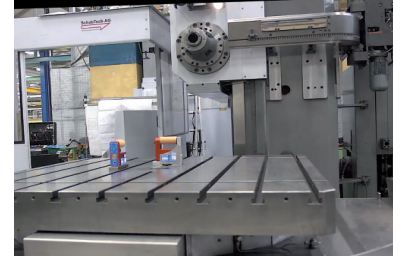
Machine beds  
Guide ways



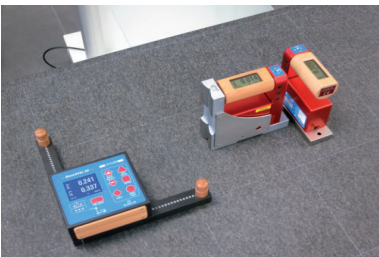
Shafts  
Rotating machine elements



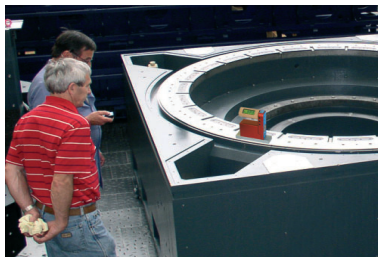
PITCH, ROLL and YAW.



Straightness, parallelism and  
flatness



Circular horizontal paths



Coplanarity, flatness of  
surfaces



### Universal

wylerSPEC makes it possible to input measurement readings not only from WYLER inclination measuring instruments, but also from laser interferometers and autocollimators.



### Fingerprint

wylerSPEC is superbly suited to create a fingerprint of your machines. Any errors are detected and eliminated in a timely fashion.



# wylerSPEC - the right software for your application

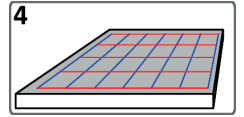
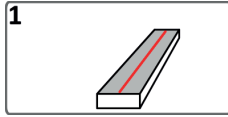
## Main target group and applications



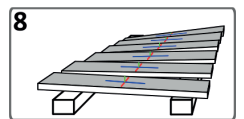
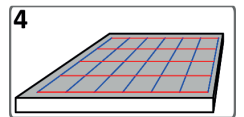
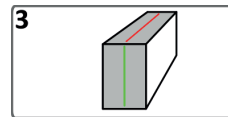
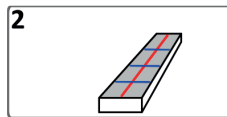
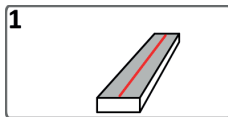
Upgrade  
↓



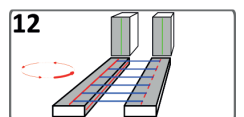
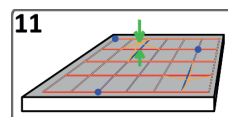
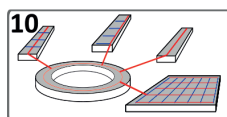
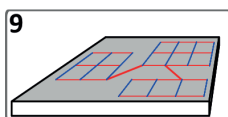
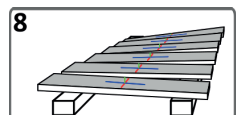
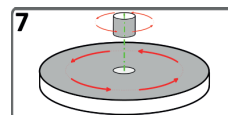
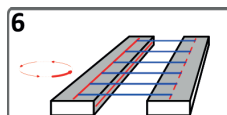
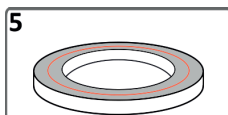
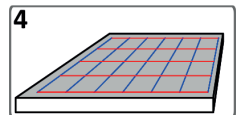
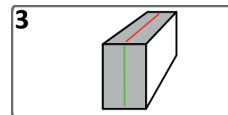
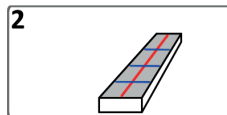
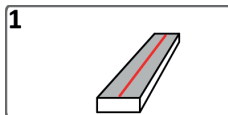
Upgrade  
↓



- Calibration laboratories
- Simple machines



- Service technicians
- Moving machines tools
- Maintenance

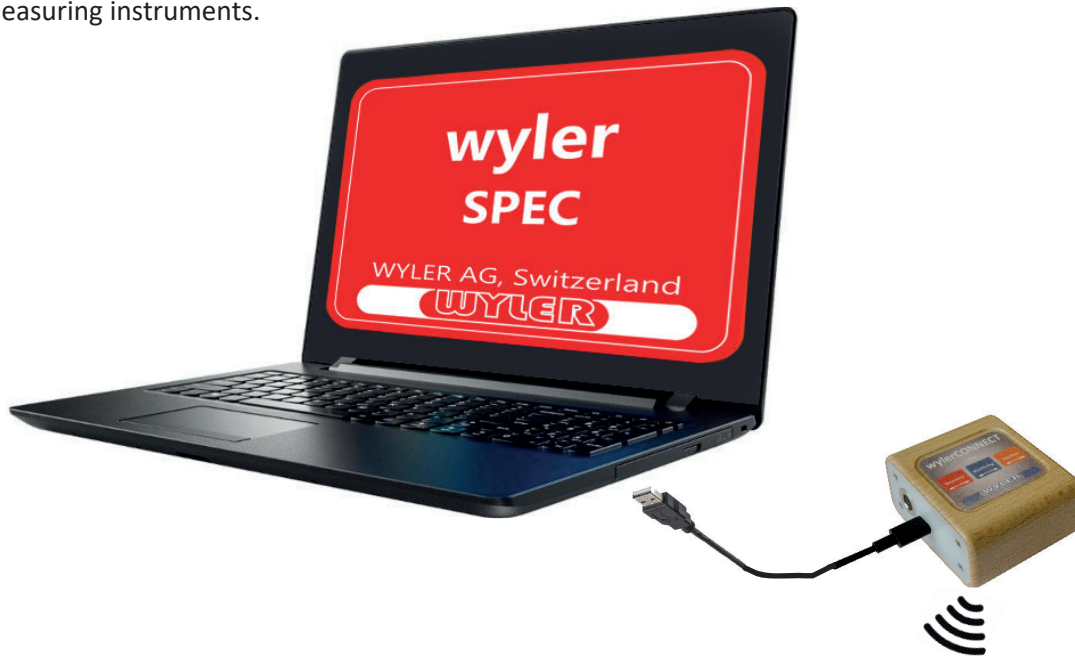


- Manufacturer of machine bases
- Manufacturer of machine tools
- Retro fit of machine tools
- Repair of machine tools

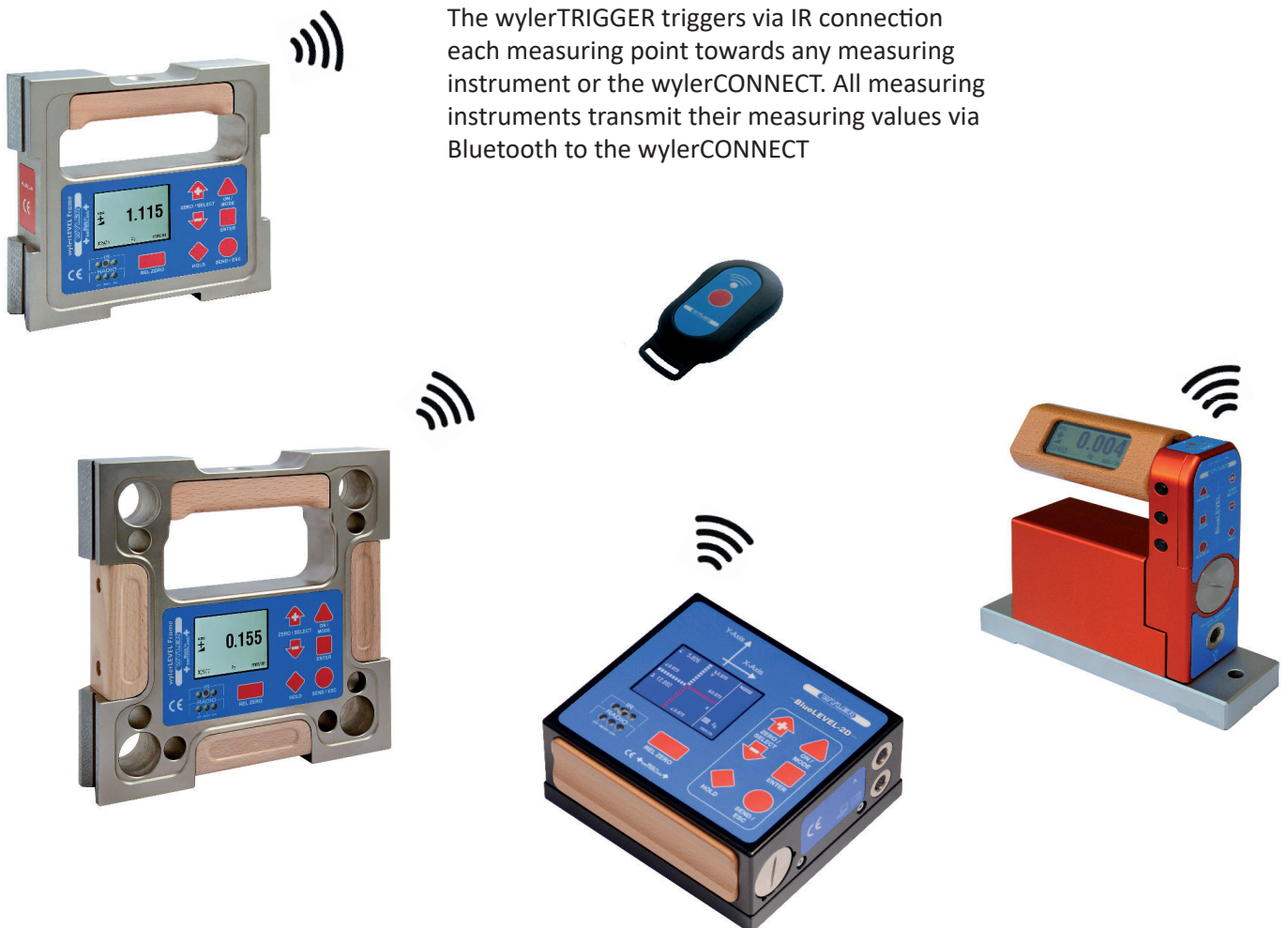


## wylerSPEC - the right software for your application

The wylerCONNECT manages the software license and features the interface between PC software and measuring instruments.



The wylerTRIGGER triggers via IR connection each measuring point towards any measuring instrument or the wylerCONNECT. All measuring instruments transmit their measuring values via Bluetooth to the wylerCONNECT

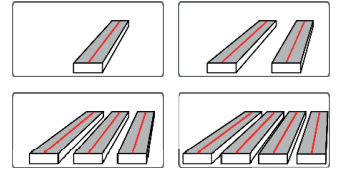


1



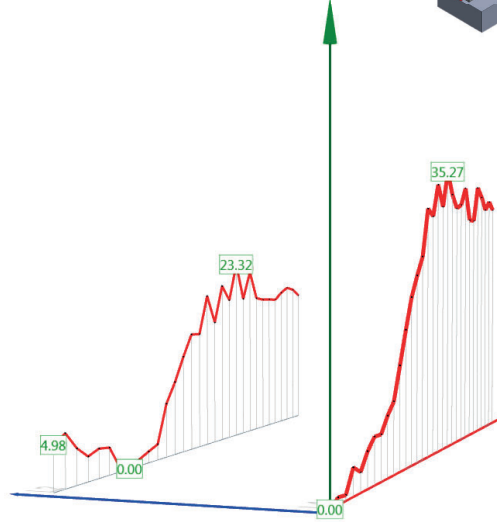
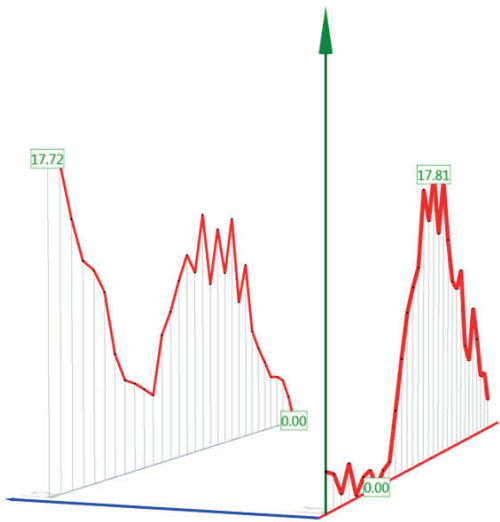
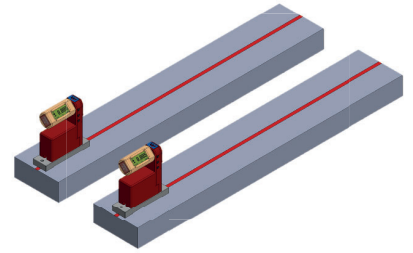
### Module 1 - Lines / Parallelism

Measurement of straightness and parallelism



Alignment method - Endpoints

Alignment method - Absolute

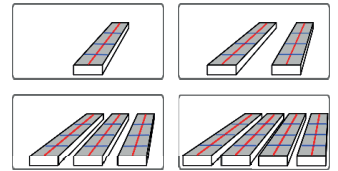


2

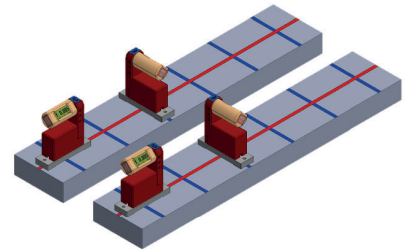
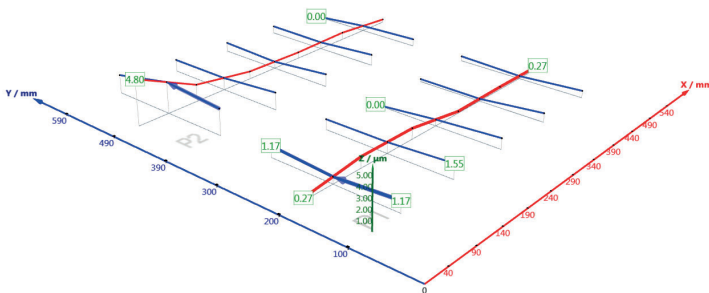


### Module 2 - Lines / Parallelism with twist

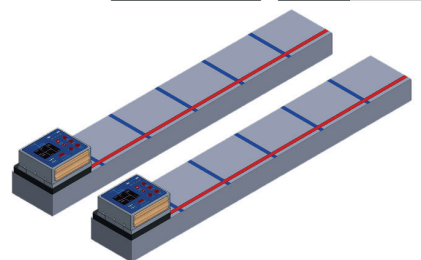
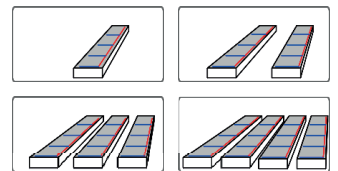
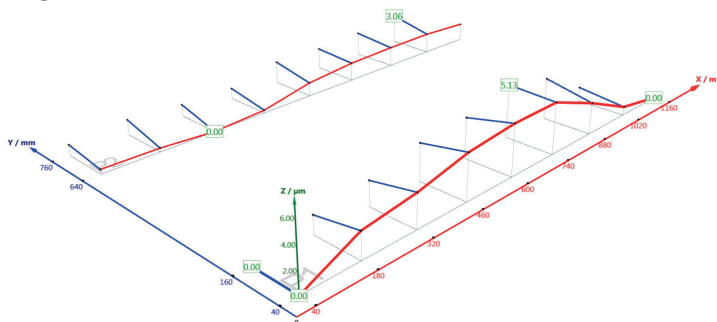
Measurement of straightness and parallelism with twist

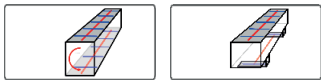


Alignment method of reference line P1 and first twist line in P1 - Endpoints



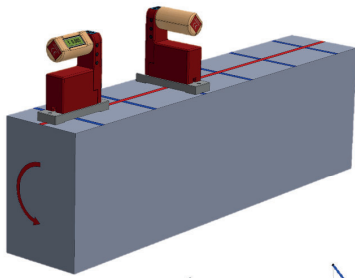
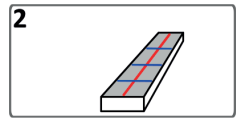
Alignment method of reference line P1 and first twist line in P1 - Endpoints



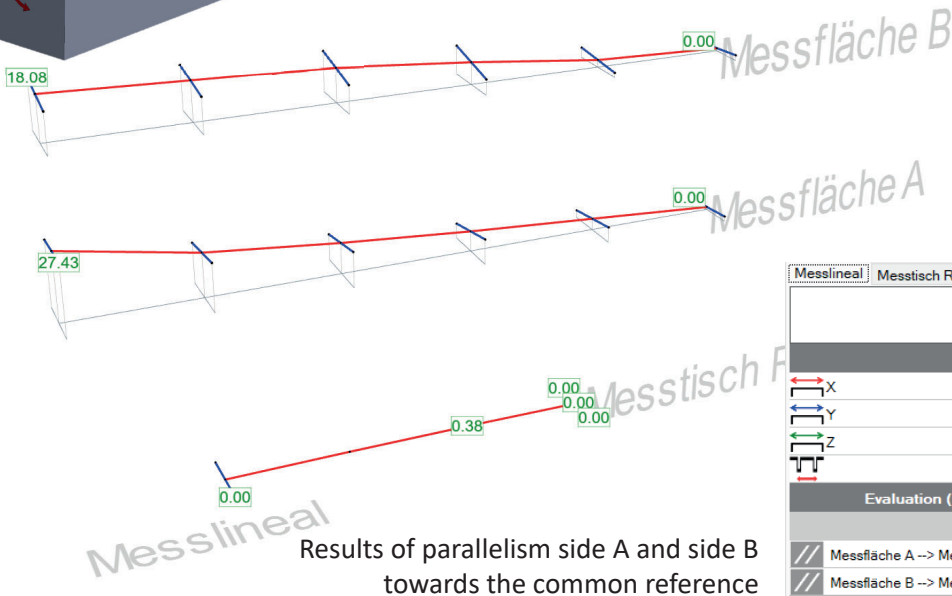


## Module 2 - Lines / Parallelism with twist 2

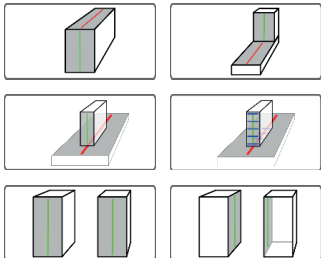
Measurement of straight edges



Measurement of a straight edge on its Bessel points  
Alignment method - ISO 1101

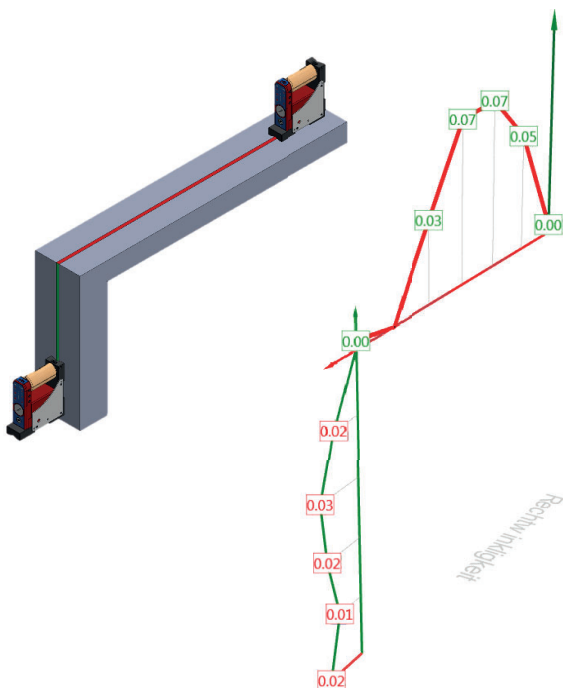
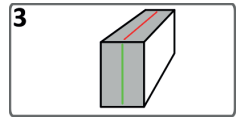


Messlineal	Messtisch REF	Messfläche A	Messfläche B
Definition measurement object			
X			500 mm
Y			50 mm
Z			70 mm
			280 mm
Evaluation (Measurement device - Reference) - ISO1101			
05.02.2020 11:33			
///	Messfläche A -> Messtisch REF		27.43 µm
///	Messfläche B -> Messtisch REF		18.08 µm

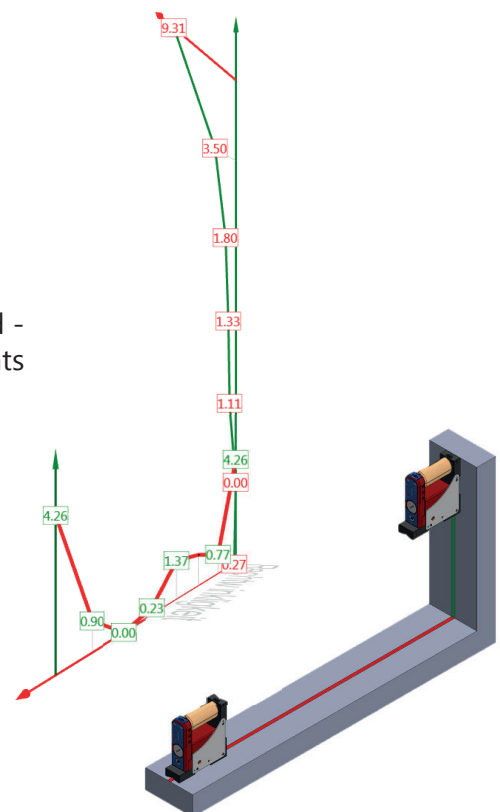


## Module 3 - Perpendicularity 3

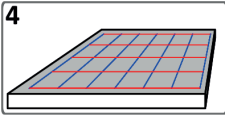
Measurement of perpendicularity on machines or a granite square



Alignment method - Endpoints

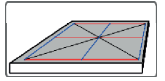


4

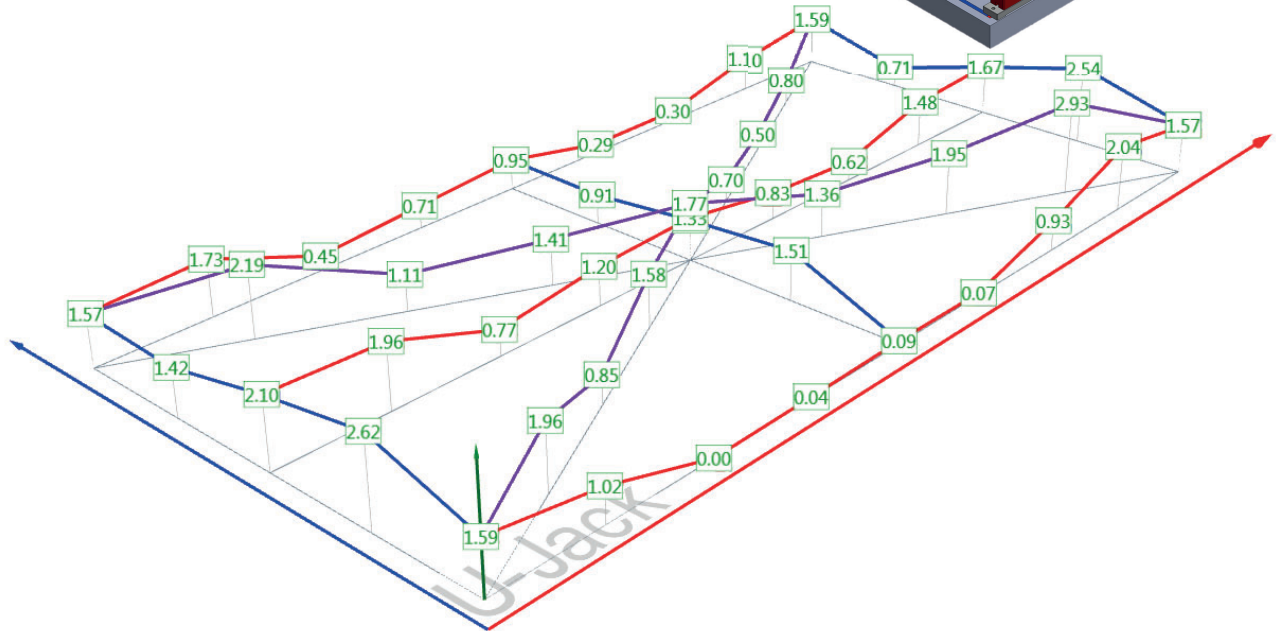
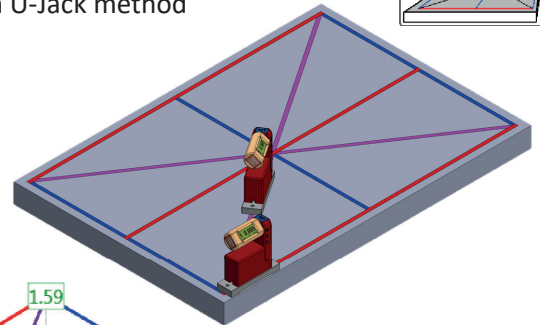


### Module 4 - Flatness

Measurement of flatness on granite tables with U-Jack method

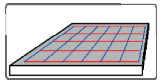


U-Jack or Moody method  
Alignment method - Endpoints of the diagonals

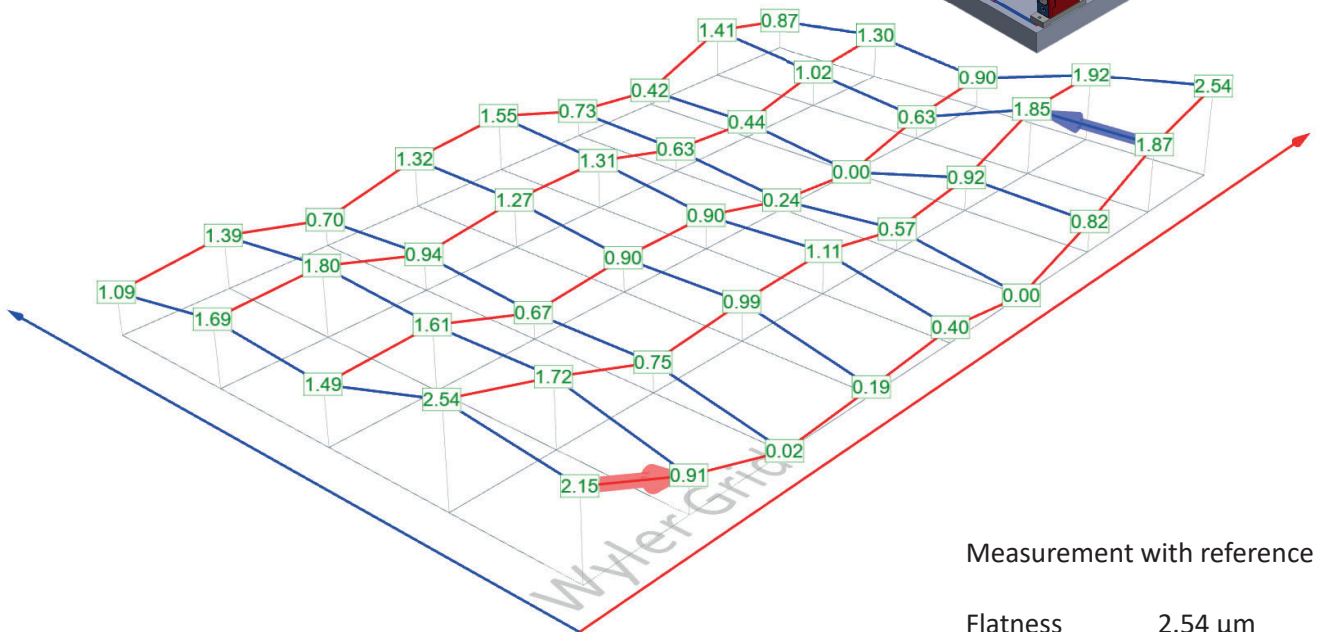
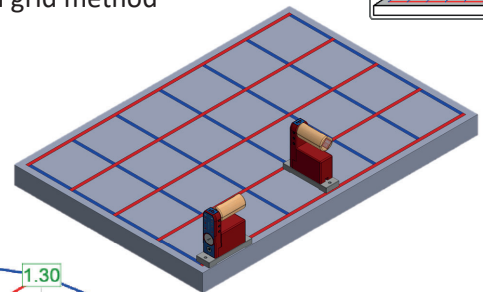


### Flatness

Measurement of flatness on granite tables or machine tool tables with grid method



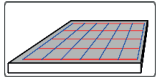
Grid method  
Alignment method - ISO 1101



Measurement with reference

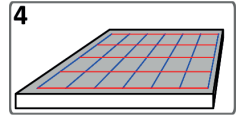
Flatness      2.54  $\mu\text{m}$





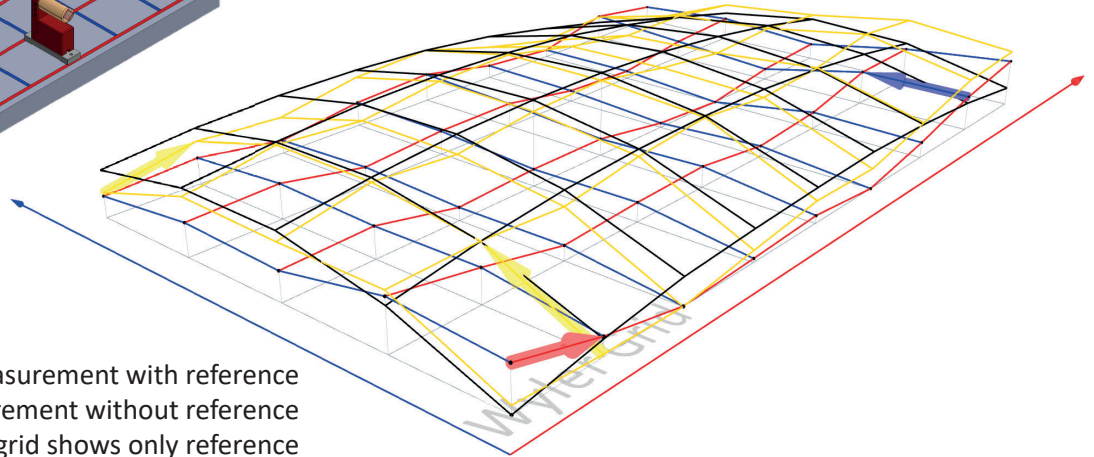
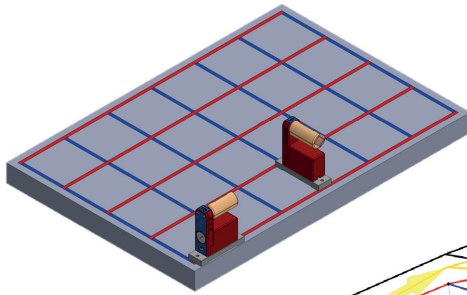
## Module 4 - Flatness 4

Measurement of flatness on granite tables with grid method

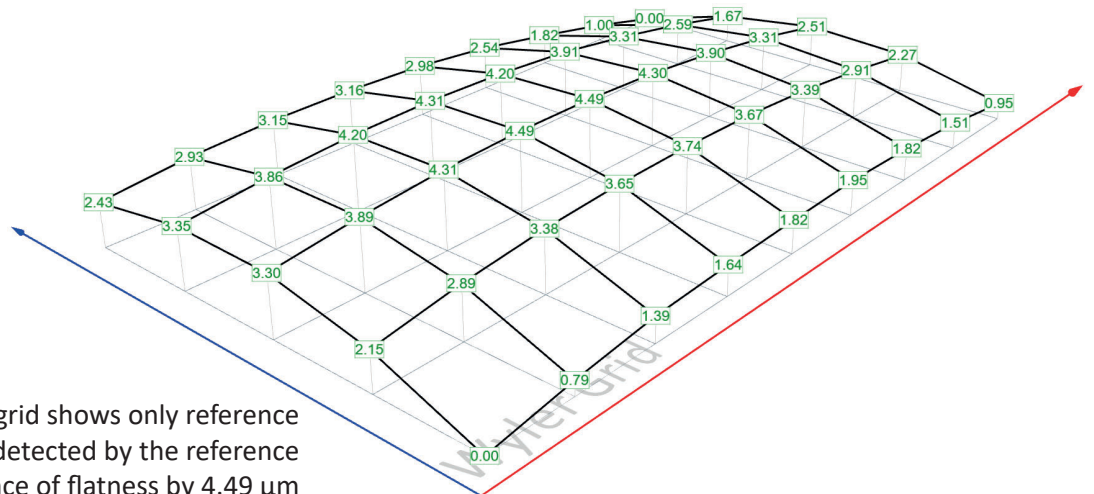


Grid method

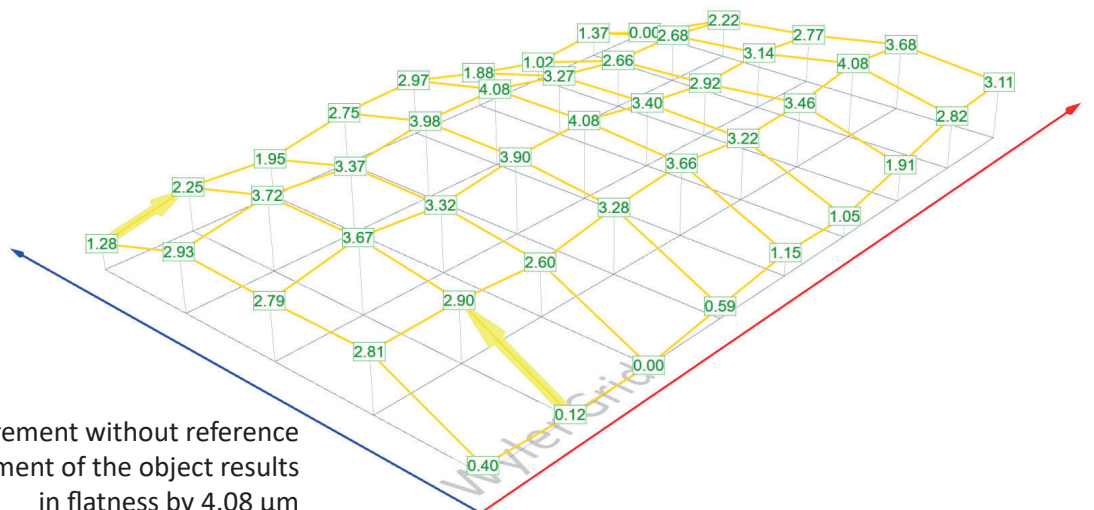
Alignment method - ISO 1101



Red/Blue grid shows measurement with reference  
Yellow grid shows measurement without reference  
Black grid shows only reference

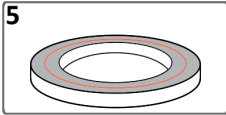


Black grid shows only reference  
Movement of the object detected by the reference  
Influence of flatness by 4.49  $\mu\text{m}$



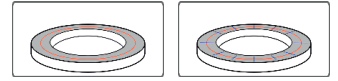
Yellow grid shows measurement without reference  
Influenced by the movement of the object results  
in flatness by 4.08  $\mu\text{m}$

5

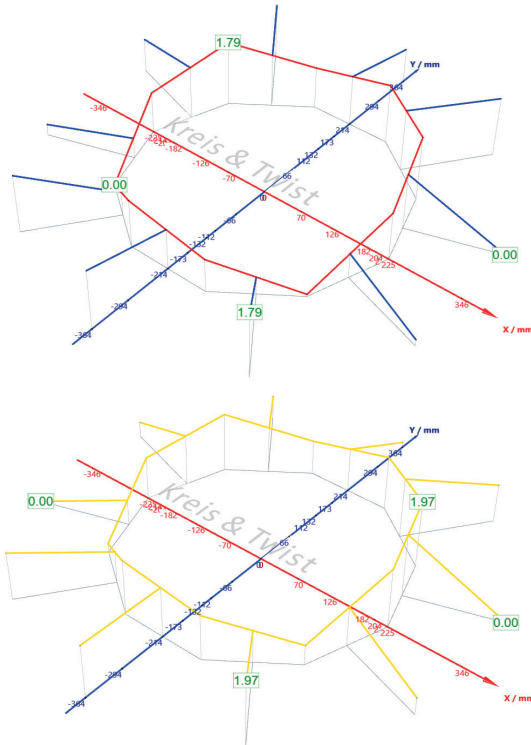


### Module 5 - Circular paths

Measurement of ring-shaped overlays consisting of one or two rings

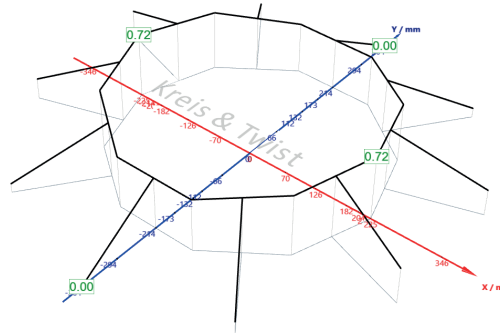


Circle with twist measured with global (X- and Y-) reference  
Alignment method - ISO 1101



Red/Blue pattern shows measurement with reference

Flatness 1.79 µm

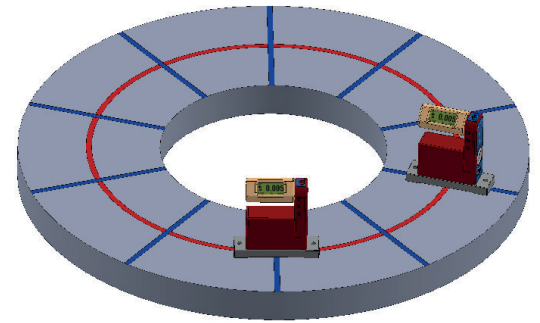


Black pattern shows movement of the object detected by the reference during the measurement

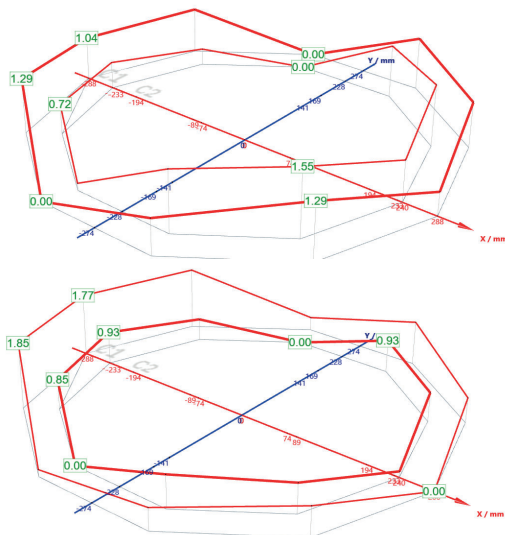
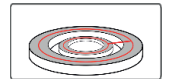
Influence on flatness 0.72 µm

Yellow pattern shows measurement without reference

Flatness 1.97 µm



Measurement of 2 ring measurements with 1 connection measurement  
Alignment method - ISO 1101



Reference C1

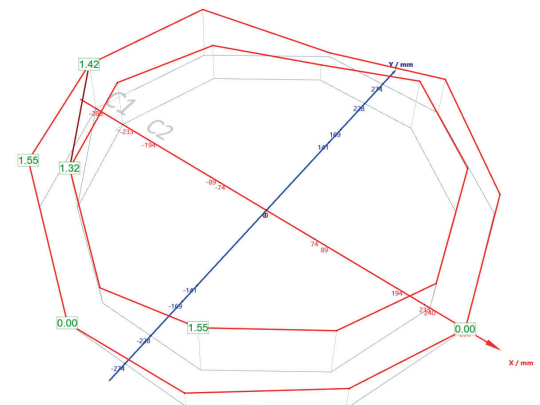
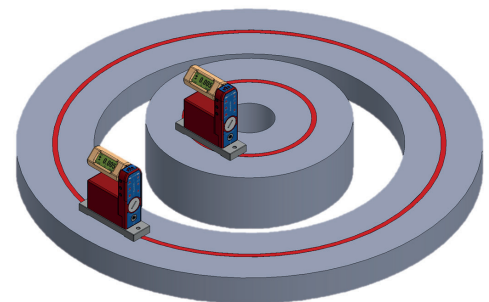
Parallelism  
C2 -> C1 1.55 µm

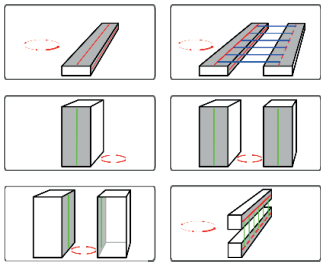
Reference C2

Parallelism  
C1 -> C2 1.85 µm

C1 connected with C2

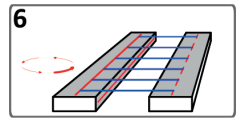
Flatness 1.55 µm



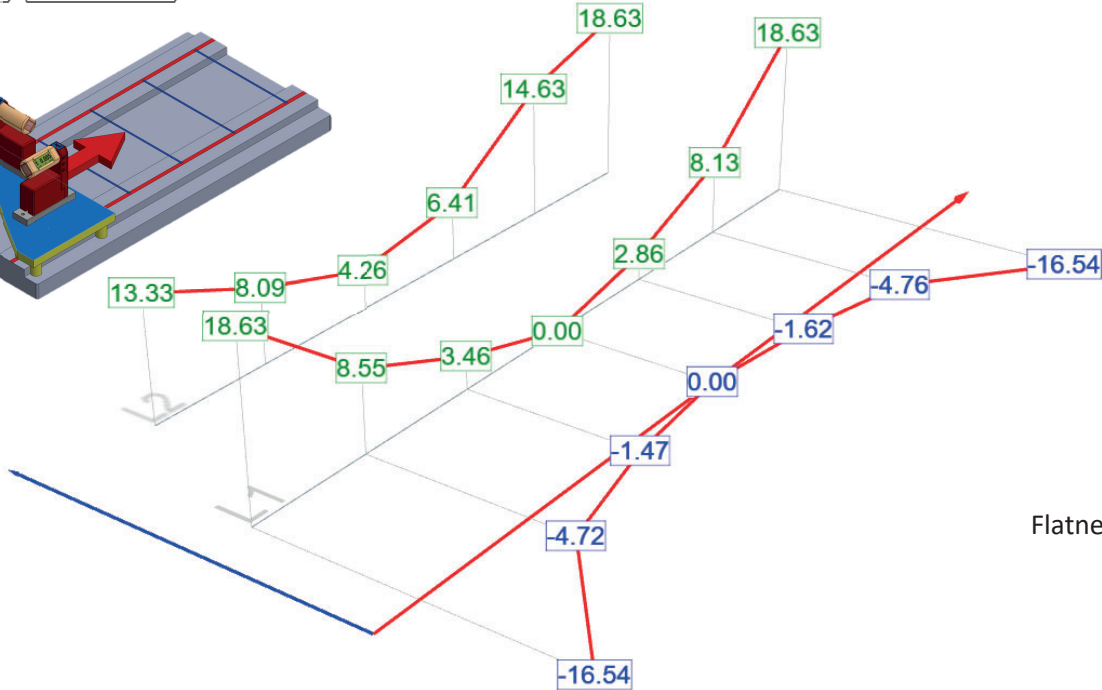
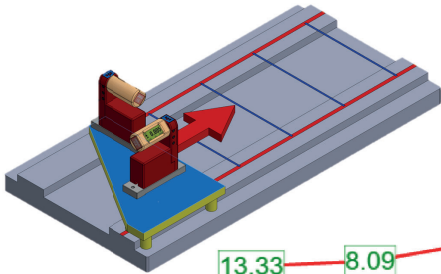


## Module 6 - Guide ways

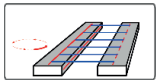
Measurement of horizontal and vertical guide ways



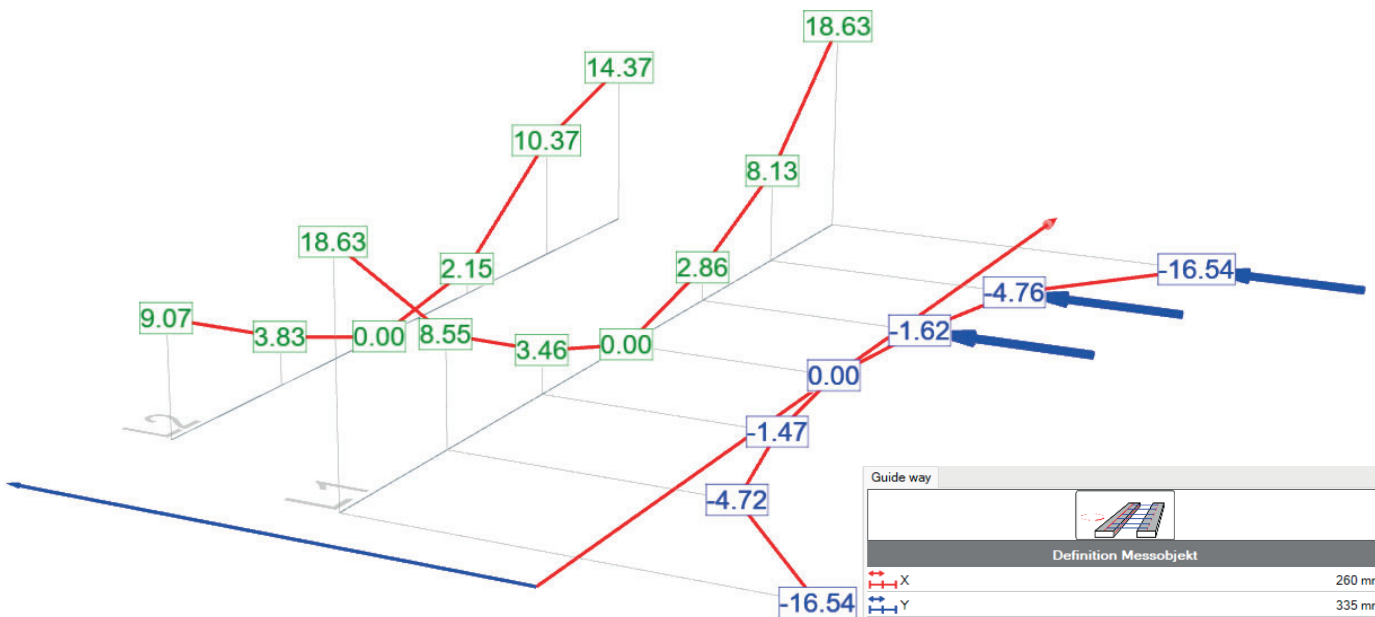
Horizontal guide ways - evaluation by flatness  
Alignment method - ISO 1101



Flatness 18.63 µm



Horizontal guide ways - evaluation by line  
Alignment method - ISO 1101



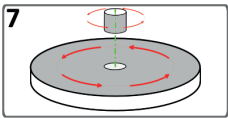
Straightness L1  
Straightness L1(Y)  
Straightness L2

18.63 µm  
16.54 µm  
11.19 µm

Max. deviation over the sweeping window of 520 mm  
Parallelism L2 -> L1

4.32 µm  
14.37 µm

Guide way	
Definition Messobjekt	
X	260 mm
Y	335 mm
X	1560 mm
Y	335 mm
Auswertung (Messgerät - Referenz) - ISO1101 (Linie)	
30.06.2021 11:47	
L1	18.63 µm
L1 (Y)	16.54 µm
L2	11.19 µm
Guide way / 520 mm	4.32 µm
L2->L1	14.37 µm



### Module 7 - Rotation vertical axis

Measurement of perpendicularity of a vertical spindle to the machine table

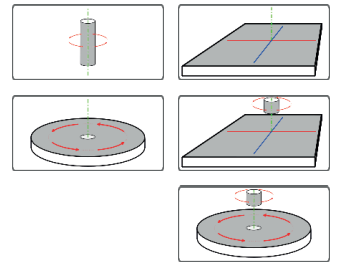
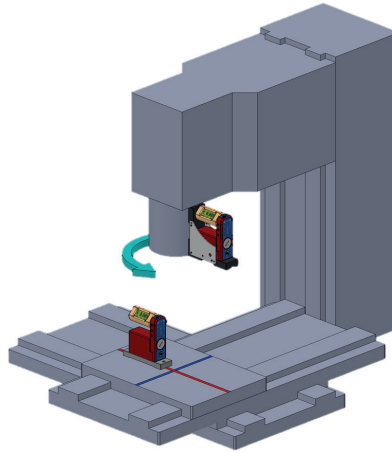
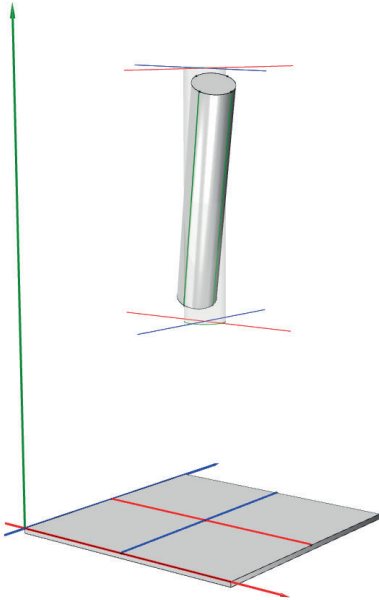
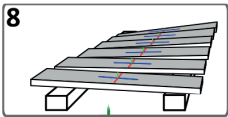
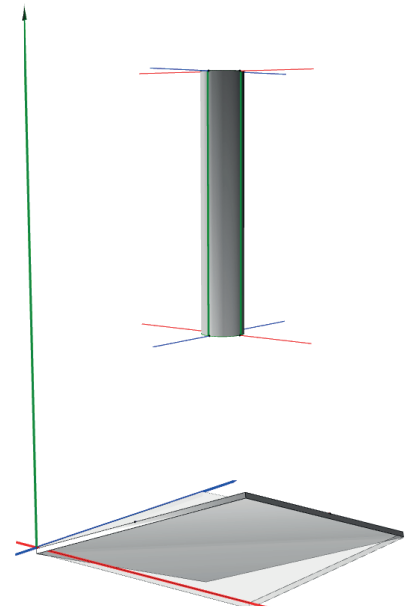


Table aligned

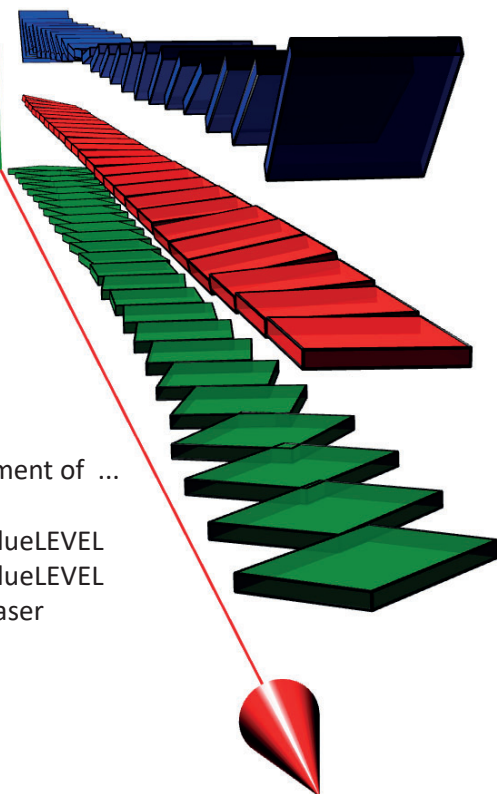
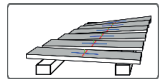


Spindle aligned



### Module 8 - Rotation PITCH - ROLL - YAW

Rotation measurement with WYLER instruments in conjunction with a laser or autocollimator



Measurement of ...

- PITCH** BlueLEVEL
- ROLL** BlueLEVEL
- YAW** Laser

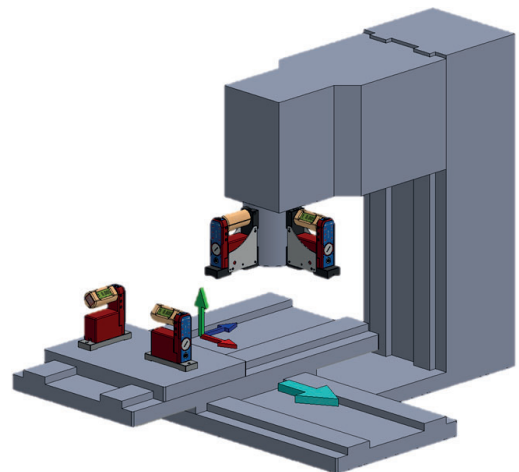
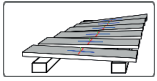


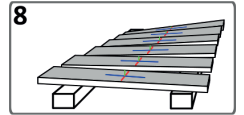
Table movement along the arrow



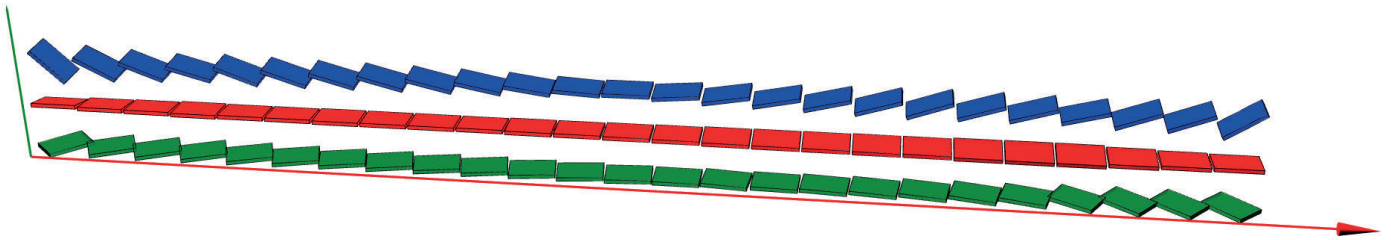


# Module 8 - Rotation PITCH - ROLL - YAW 8

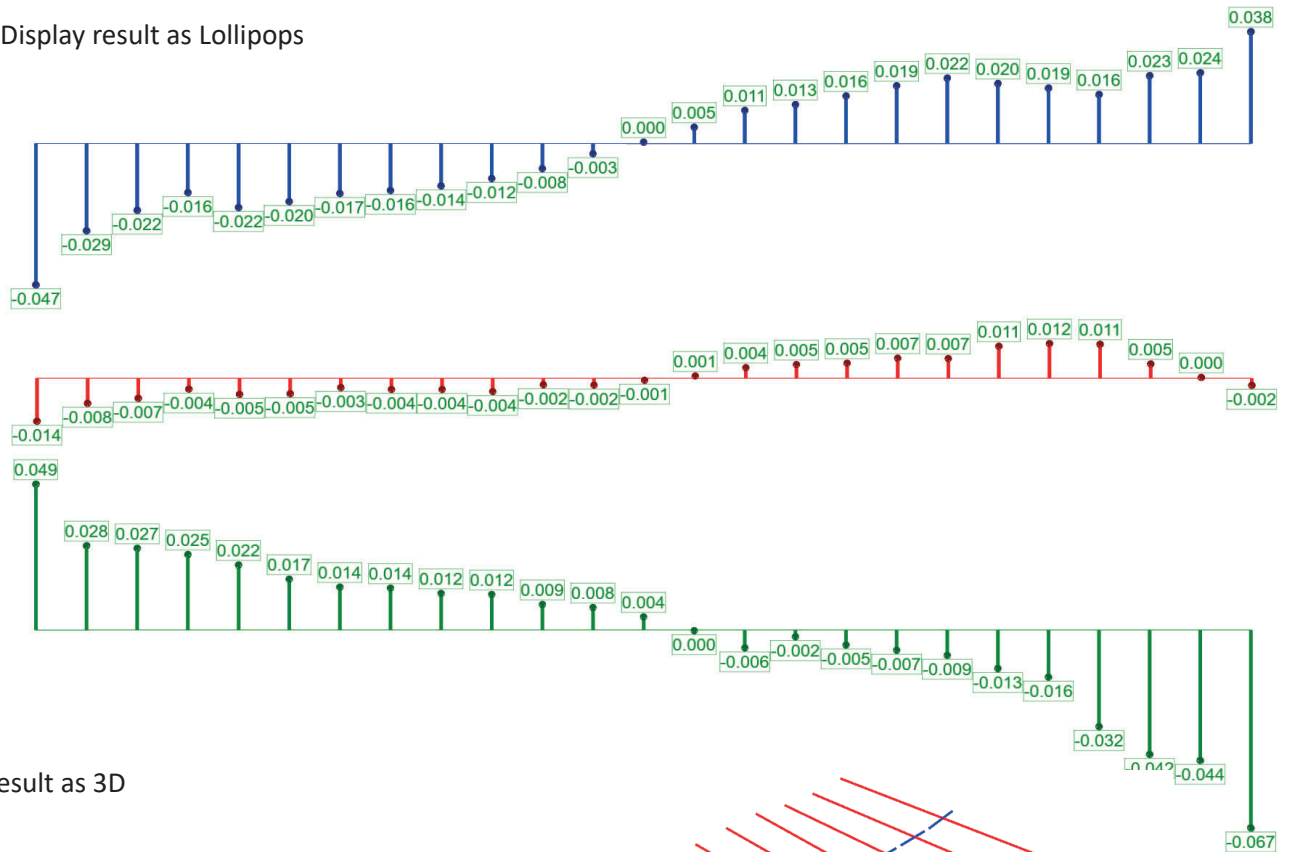
Rotation measurement with WYLER instruments in conjunction with a laser or autocollimator



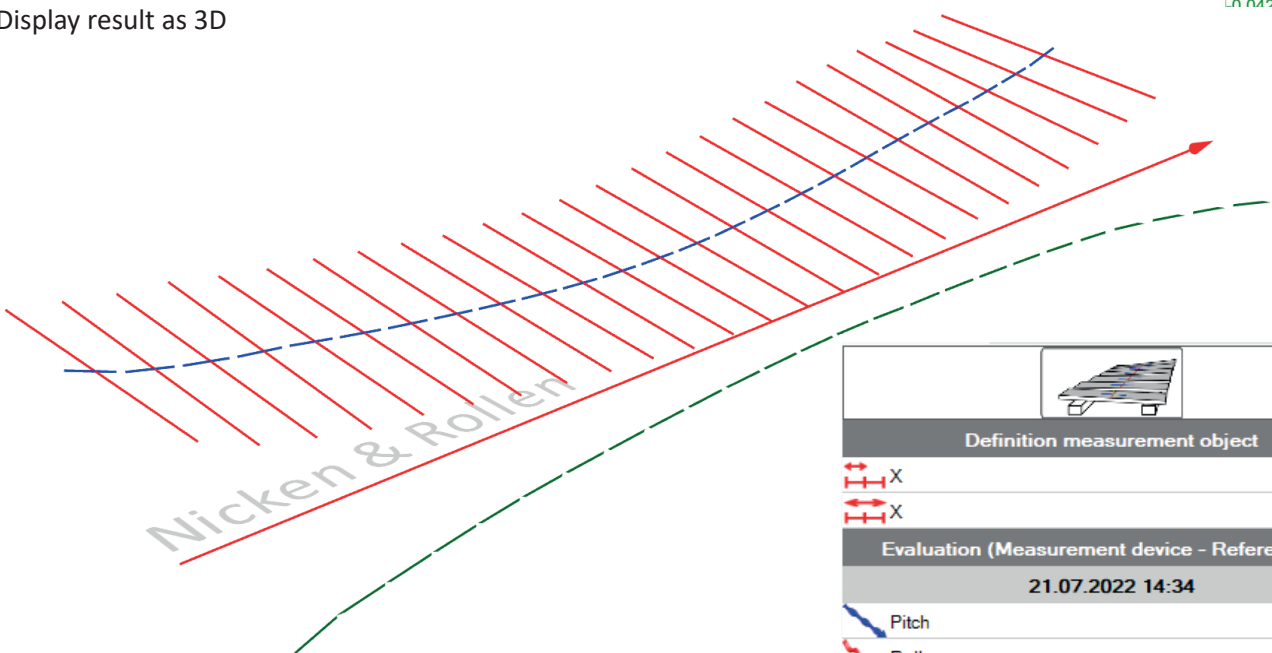
Display result as surfaces



Display result as Lollipops

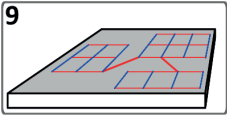


Display result as 3D



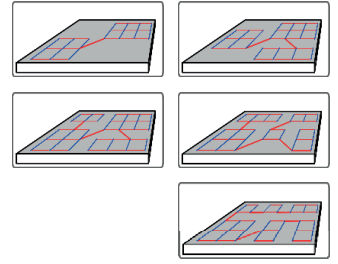
Definition measurement object	
X	50 mm
X	1200 mm
Evaluation (Measurement device - Reference) -	
21.07.2022 14:34	
Pitch	0.085 mm/m
Roll	0.026 mm/m
Yaw	0.116 mm/m

9

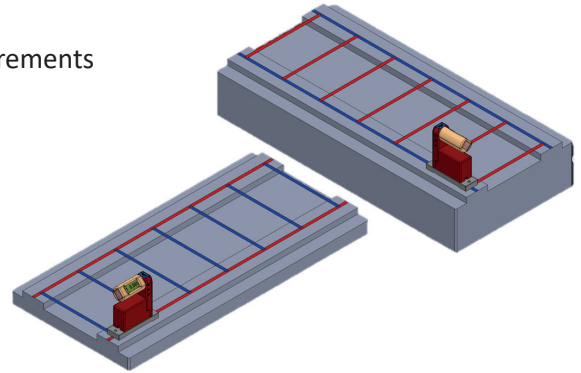


## Module 9 - Flatness - Parallelism and coplanarity of surfaces

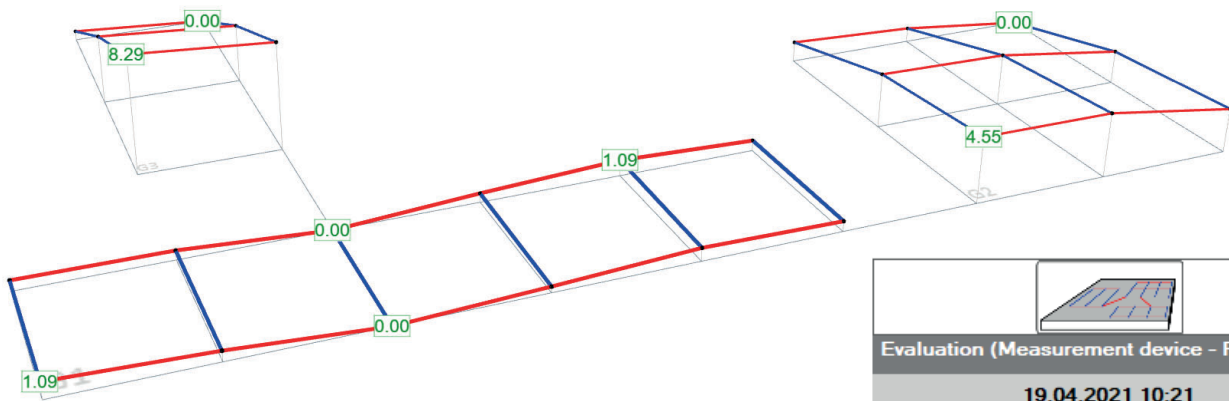
Measurement of flatness, parallelism and coplanarity of separately measured areas of a machine



Measurement of 3 rectangular areas with 2 connection measurements  
Alignment method - ISO 1101

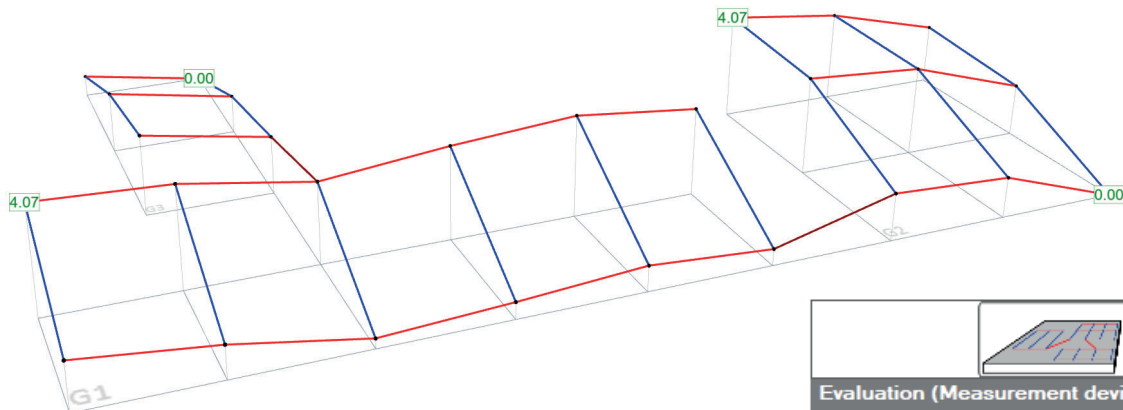


Parallelism of areas

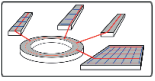


Evaluation (Measurement device - Reference)	
19.04.2021 10:21	
// G2 --> G1	4.55 $\mu\text{m}$
// G3 --> G1	8.29 $\mu\text{m}$

Coplanarity of areas

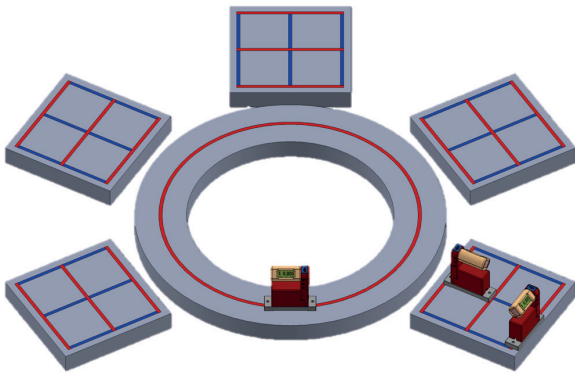
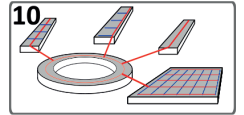


Evaluation (Measurement device - Reference)	
19.04.2021 10:21	
□	4.07 $\mu\text{m}$



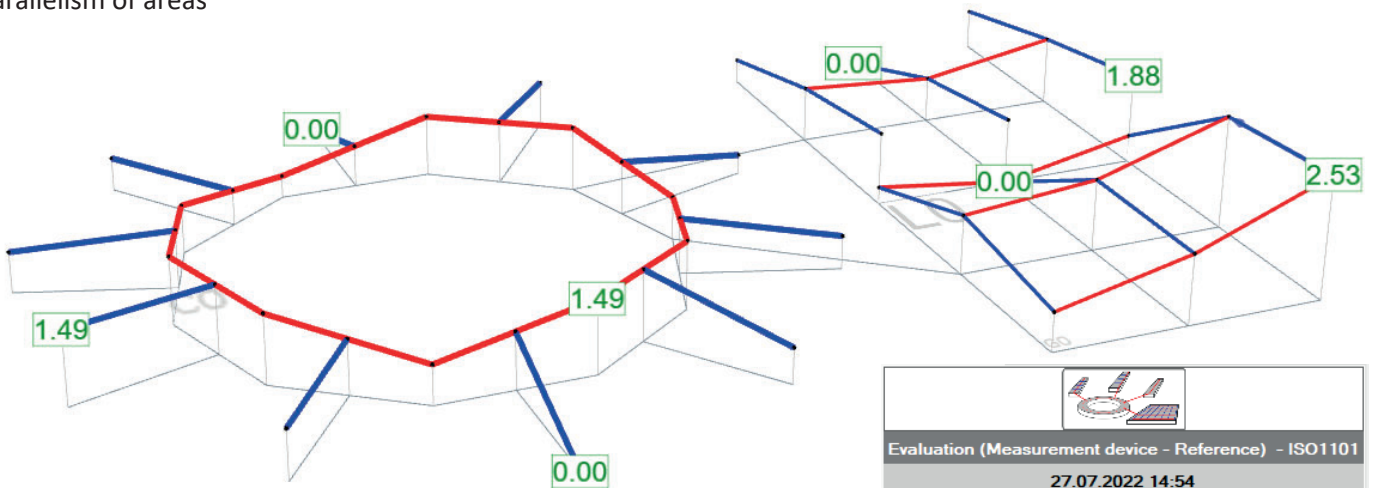
## Module 10 - Own measurements

Measurement of flatness, parallelism and coplanarity of separately measured areas of a machine, with a flexible measurement layout



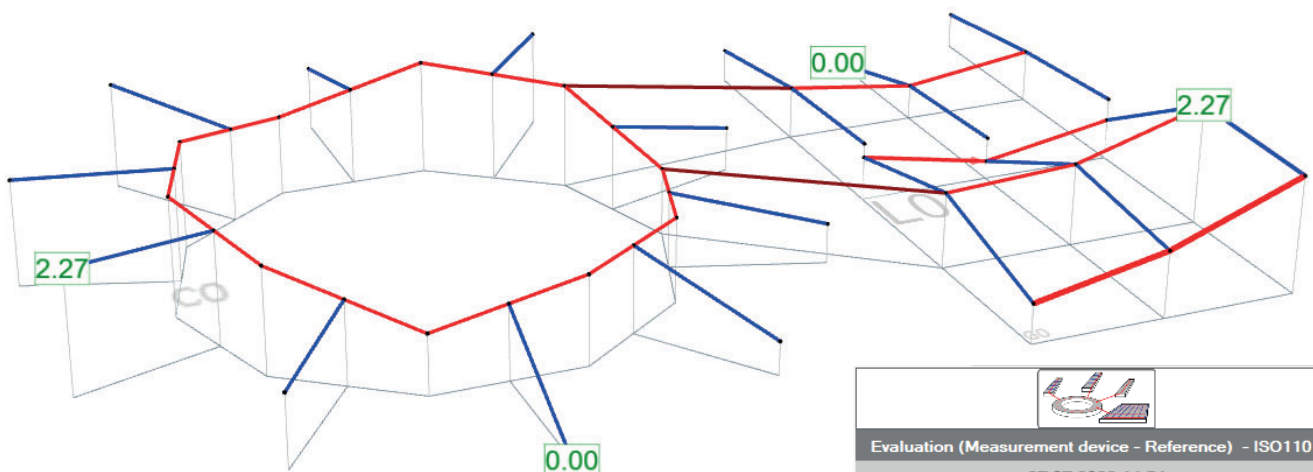
Measurement of 3 areas with 2 connection measurements  
Alignment method - ISO 1101

Parallelism of areas



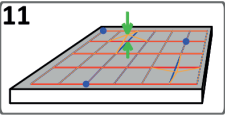
Evaluation (Measurement device - Reference) - ISO1101		
27.07.2022 14:54		
	C0	1.49 $\mu\text{m}$
	G0 --> C0	2.53 $\mu\text{m}$
	L0 --> C0	1.88 $\mu\text{m}$

Coplanarity of areas



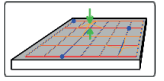
Evaluation (Measurement device - Reference) - ISO1101		
27.07.2022 14:54		
	C0	2.27 $\mu\text{m}$

11



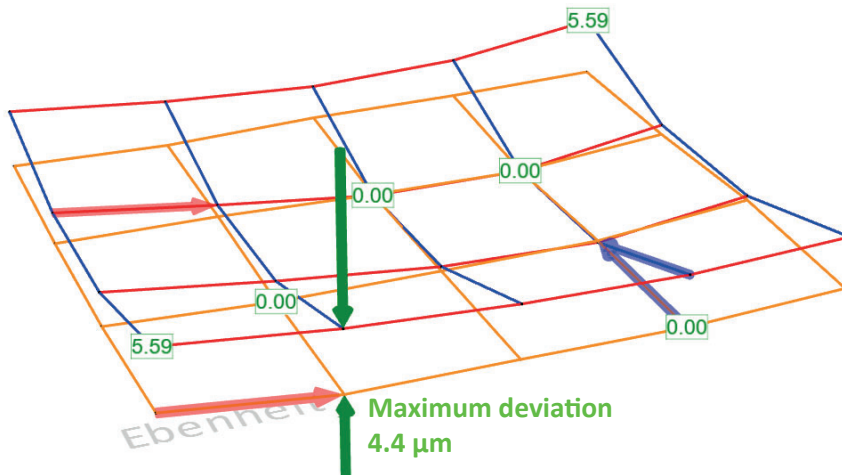
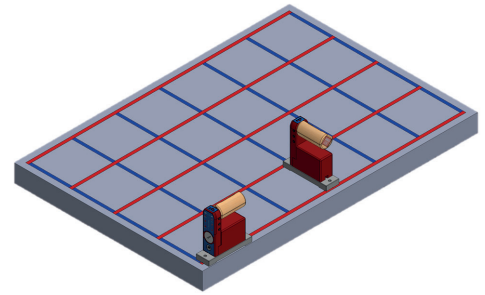
## Module 11 - Trend

Comparison of two identical measurements

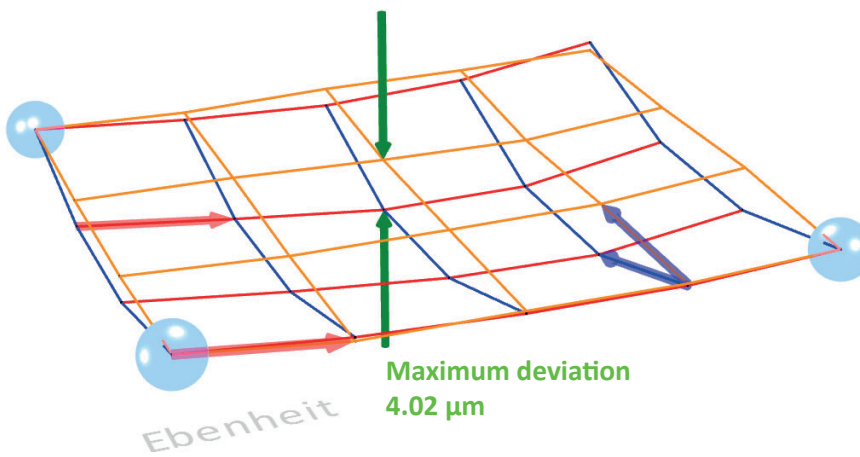


Comparison of 2 measurements of the same area. In this example we compare measurements of a granite table before and after lapping.

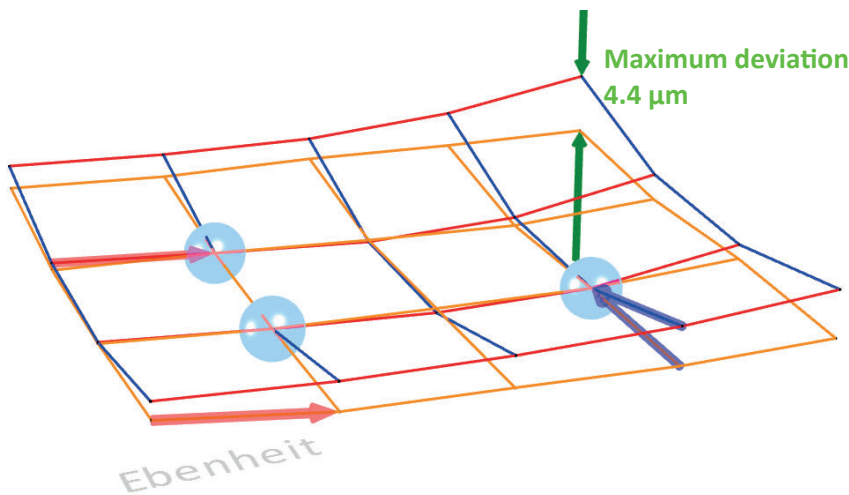
Alignment method of first (Red/Blue) measurement - ISO 1101



Alignment method of second (Yellow) measurement - ISO 1101

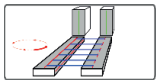


Alignment method of second (Yellow) measurement - connected by 3 points (corners), which are chosen by the user



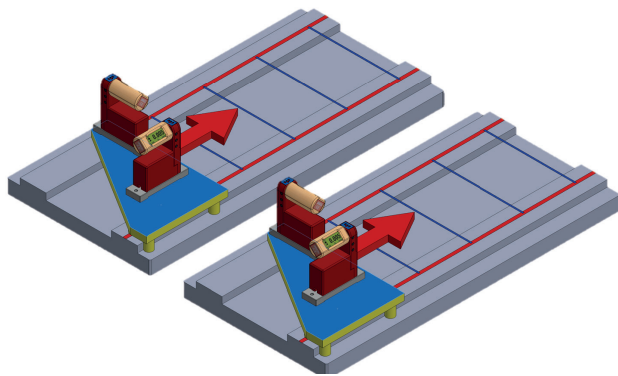
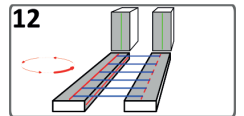
Alignment method of second (Yellow) measurement - connected by 3 points (inside), which are chosen by the user





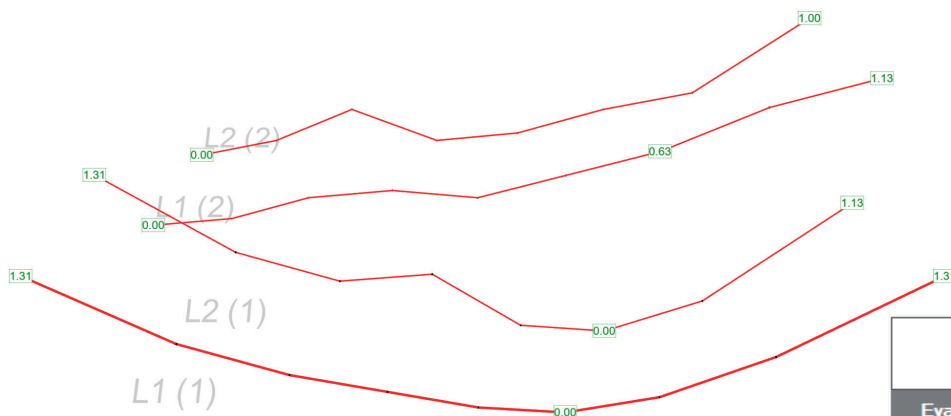
## Module 12 - Combination

Combination of two measurements to reach information of parallelism or rectangularity

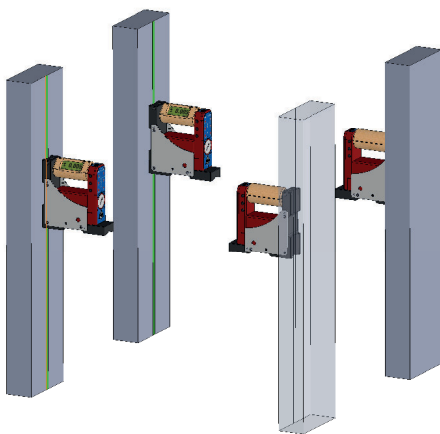


Combination of two measurements  
Alignment method - ISO 1101

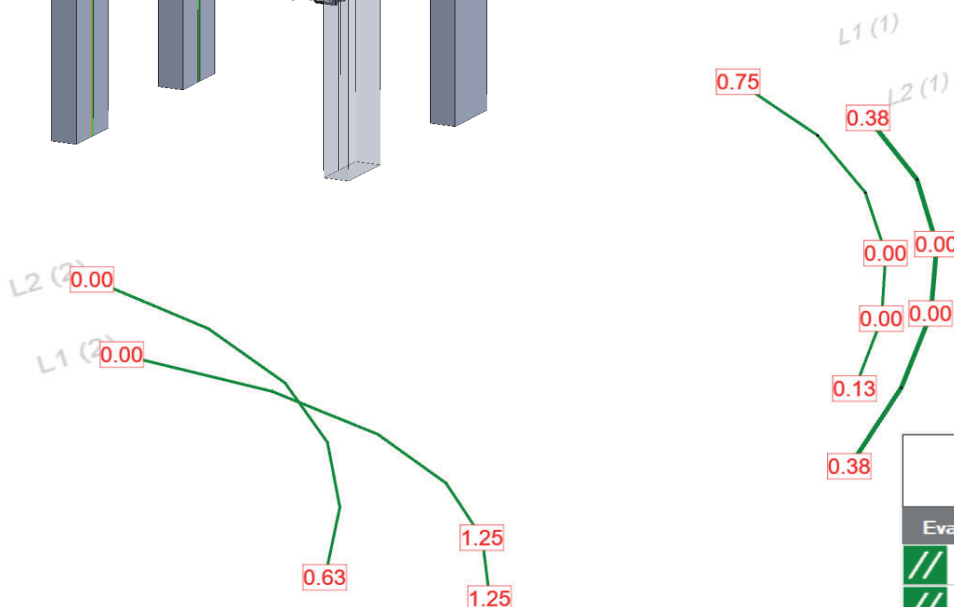
Horizontal guide ways - combined for evaluation of parallelism. Chosen reference L1(1)



Evaluation (Measurement device) - ISO1101		
///	L2 (1) -> L1 (1)	1.31 $\mu\text{m}$
///	L1 (2) -> L1 (1)	1.13 $\mu\text{m}$
///	L2 (2) -> L1 (1)	1.00 $\mu\text{m}$

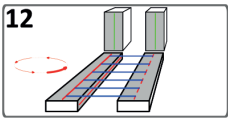


Vertical opposite guide ways - combined for evaluation of parallelism. Chosen reference L2(1)



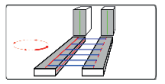
Evaluation (Measurement device) - ISO1101		
///	L1 (1) -> L2 (1)	0.75 $\mu\text{m}$
///	L1 (2) -> L2 (1)	1.25 $\mu\text{m}$
///	L2 (2) -> L2 (1)	0.75 $\mu\text{m}$

12

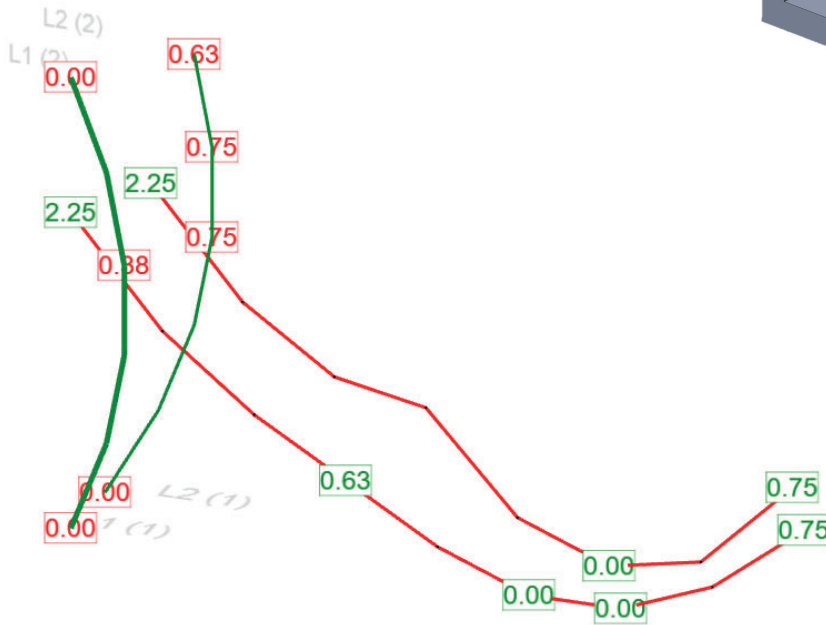
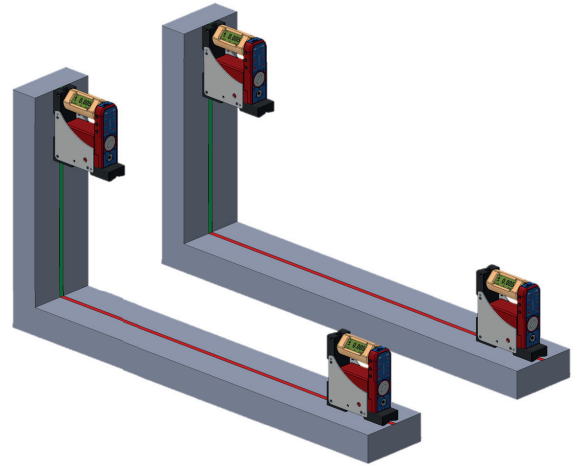


## Module 12 - Combination

Combination of two measurements to reach information of parallelism or rectangularity

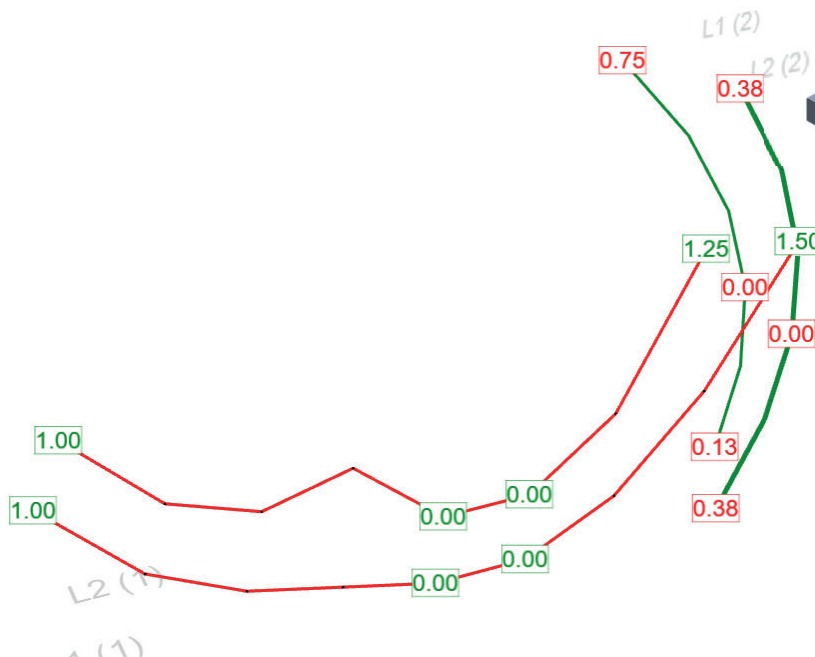
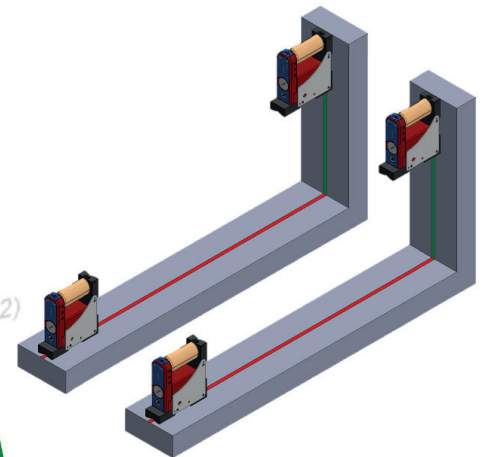


Horizontal and on left side vertical guide ways - combined for evaluation of angularity. Chosen reference L1(2)  
Alignment method - ISO 1101



Evaluation (Measurement device) - ISO1101		
///	L2 (2) -> L1 (2)	0.75 µm
	L1 (1) -> L1 (2) ISO 1101	2.25 µm
	L1 (1) -> L1 (2) End points	1.50 µm
	L1 (1) -> L1 (2) Linear regression	1.65 µm
	L2 (1) -> L1 (2) ISO 1101	2.25 µm
	L2 (1) -> L1 (2) End points	1.50 µm
	L2 (1) -> L1 (2) Linear regression	1.77 µm

Horizontal and on right side vertical guide ways - combined for evaluation of angularity. Chosen reference L2(2)  
Alignment method - ISO 1101



Evaluation (Measurement device) - ISO1101		
///	L1 (2) -> L2 (2)	0.75 µm
	L2 (1) -> L2 (2) ISO 1101	1.25 µm
	L2 (1) -> L2 (2) End points	0.25 µm
	L2 (1) -> L2 (2) Linear regression	0.02 µm
	L1 (1) -> L2 (2) ISO 1101	1.50 µm
	L1 (1) -> L2 (2) End points	0.50 µm
	L1 (1) -> L2 (2) Linear regression	0.35 µm

# wylerSPEC - Printout

## Standard report

To print reports, you can choose from pre-configured standard reports, or you create your own customized reports with the help of the integrated protocol editor.

**WYLER**

Name of measurement: Gunter Lasczyk  
 Measurement name: Platte bearbeitet 1200 x 800  
 Manufacturer: WYLER AG  
 Customer: Kunde Schweiz AG  
 Order: 18/105704  
 Object: Mess- und Kontrollplatte  
 Serial number: 0815  
 Start date/time: 09.05.2022 10:38:17  
 End date/time: 09.05.2022 11:01:56  
 Temperature Top Begin: [Icon]  
 Temperature Top End: [Icon]  
 Temperature Bottom Begin: [Icon]  
 Temperature Bottom End: [Icon]  
 Measurement description: Referenzmessung WYLER // ISO 1101 / DIN 876-1

Measurement settings	Assessment (ISO1101)(Surface)	Measurement device
Platte bearbeitet 1200 x 800	Platte bearbeitet 1200 x 800	X ABS S2323
X 1000 mm	X-1	X REF X0745
Y 630 mm	Y-1	Y ABS S2323
Z 80 mm	/ 230 mm	Y REF X0745
X 115 mm		
Y 140 mm		
	Index of correction	0.19 µm
	DIN876	00

Scatter limit 0.001

## Customized report with two pages

**WYLER AG**  
CH-8405 Winterthur  
www.wylerag.com

**WYLER**

**Kalibrier-Zertifikat**

Akkreditierungs-Nummer SCS 0044  
Seite 1 von 2 Seiten

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Zertifikats-Nummer **1802702**

Auftraggeber **Kunde Schweiz AG** Auftragsnummer **18/105704**

Hersteller **WYLER AG**

Objekt **Mess- und Kontrollplatte**  
 Abmessung **1200 x 800 x 180 mm**  
 Material **Hartgestein**  
 Messort **Werkhalle**  
 Seriennummer **0815**

Messbeginn **21.1 °C** Messende **21.2 °C**  
 Temperatur oben **21.1 °C** Temperatur unten **21.2 °C**  
 Feuchtigkeit **2.41 µm**  
 Ebenheit **1.5 µm**  
 Messunsicherheit **0.001 mm/m**

Messgerät

X	ABS	S2323
X REF		X0745
Y	ABS	S2323
Y REF		X0745

Prüfer **Gunter Lasczyk**  
Datum / Uhrzeit **09.05.2022 11:01:56**

Messprinzip Die Messwerte werden von der Software wylerSPEC 70.0.0.0 übernommen. Die Auswertung erfolgt nach ISO 1101. Die Messung wird gemäss "Kalibrieranweisung für Flächenmessung" SCS\_Kal\_04 durchgeführt.

Dieses Kalibrierzertifikat dokumentiert die Rückführbarkeit auf nationale Normale zur Darstellung der physikalischen Einheiten (SI). Messresultate, Messunsicherheiten mit Vertrauensbereich und Messverfahren sind Teil dieses Zertifikates. Die angegebene erweiterte Messunsicherheit ist die Standardunsicherheit der Messung multipliziert mit einem Erweiterungsfaktor k=2, was für eine Normalverteilung einem Vertrauensniveau von etwa 95% entspricht.

Leiter der Kalibrierstelle

Datum **30.06.2023** **Björn Heinsohn**

Der Inhalt dieses Zertifikates darf nur in vollständiger Form veröffentlicht oder weitergegeben werden und bedarf der Genehmigung der ausstellenden Kalibrierstelle Version: 2-0

Bemerkung  
**Referenzmessung WYLER / ISO 1101 / DIN 876-1**

**WYLER AG**  
CH-8405 Winterthur  
www.wylerag.com

**WYLER**

**Kalibrier-Zertifikat**

Akkreditierungs-Nummer SCS 0044  
Seite 2 von 2 Seiten

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Zertifikats-Nummer **1802702**

**Platte bearbeitet 1200 x 800**

**Bewertung (ISO1101)(Fläche)**

X-1	1.94 µm
Y-1	1.17 µm
	2.41 µm
Korrekturindex	0.19 µm
DIN876	00

**Messeinstellungen**

X	1000 mm
Y	630 mm
Z	80 mm
X	115 mm
Y	140 mm

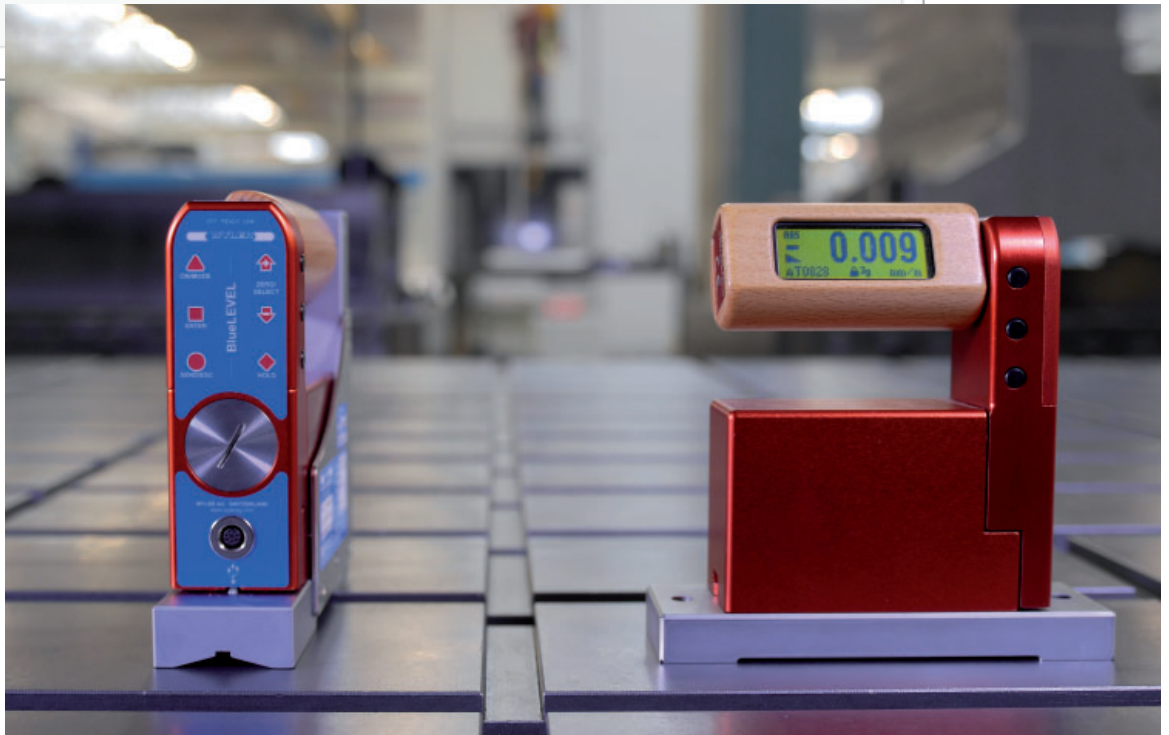
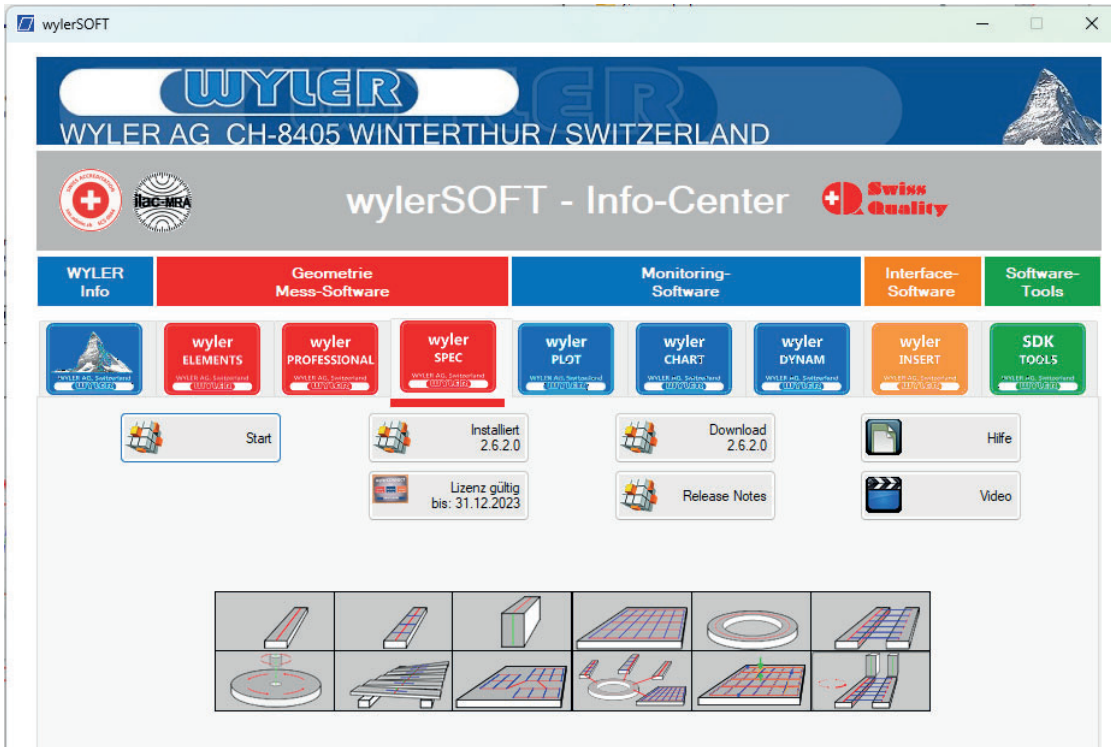
Ausrichtmethode **ISO 1101**  
Schliffesfehlerkorrektur **Phillips**

Orientierung Der Koordinaten-Nullpunkt des Messgitters entspricht dem linken Ende der Platten-Stirnseite, an der die Etikette aufgeklebt ist, beziehungsweise der einzelne Auflagepunkt links liegt.

Der Inhalt dieses Zertifikates darf nur in vollständiger Form veröffentlicht oder weitergegeben werden und bedarf der Genehmigung der ausstellenden Kalibrierstelle Version: 2-0

# For your geometric applications you choose wylerSPEC

The wylerSPEC software seamlessly joins the line of successful wylerSOFT products



Version 2023-1  
Changes without prior notice