

# **ZEISS COMET LED 2**

## **Simple and quick 3D measurements**



The new, mobile system for optical 3D scanning

# COMET L3D 1 Success Story



- 2011 May** COMET L3D 2M first presentation at Control 2011
- 2011 December** COMET L3D 5M was presented at Euromold 2011
- 2012 September** COMET L3D 8M was presented
- 2013 May** New colin3D for the COMET L3D system was presented

Until now, more than 1.000 COMET L3D units have been sold.

Because of its compact design, the COMET L3D has revolutionized the optical 3D scanning market. The sensor has been the most successful directly marketed product of our company's history.



# COMET LED Product Philosophy



- Ultra-portable
- Small dimensions
- Easy, intuitive handling
- Very fast
- Known Steinbichler quality
- High precision
- Best price-performance rate on the market



# The New Sensor Generation: COMET LED → ZEISS COMET LED 2



# ZEISS COMET L3D 2 5M – Ultra-Compact Sensor Simple and Quick 3D Measurement



- Achieve optimal measurement results quickly and easily
  - ready for use in minimum time
  - perfect complete solution with latest sensor technology and project orientated software ZEISS colin3D
  - high efficiency



# ZEISS COMET L3D 2 5M – Ultra-Compact Sensor Simple and Quick 3D Measurement



- Less weight
  - 5.2 kg instead of 6 kg
- New Design
  - High-quality design
  - Improved ergonomics
  - New handle
  - 50 % lower volume of sensor body
- Low-noise operation



# ZEISS COMET L3D 2 5M

## Dimensions



	L3D 2 5M	L3D 1 5M	Difference in %
<b>Width</b>	<b>415 mm</b>	430 mm	<b>-3 %</b>
<b>Height</b>	<b>126 mm</b>	158 mm	<b>-20 %</b>
<b>Depth</b>	<b>180 mm</b>	265 mm	<b>-32 %</b>
<b>Volume</b>	<b>9,412 cm<sup>3</sup></b>	18,004 cm <sup>3</sup>	<b>-48 %</b>
<b>Weight</b>	<b>5.2 kg</b>	6 kg	<b>-13 %</b>
<b>Measurement time</b>	<b>1 sec</b>	2 sec	<b>-50 %</b>

# ZEISS COMET LED 2 5M New Design



New Design



New connector arrangement



50 % less volume



# ZEISS COMET L3D 2 5M – Ultra-Compact Sensor Flexibility and Convincing Performance



- Innovative Technology
  - high light yield / fast camera
  - precise measurement results even in difficult ambient conditions and on different object surfaces
  - automatic recognition of changes in vibration and exposure

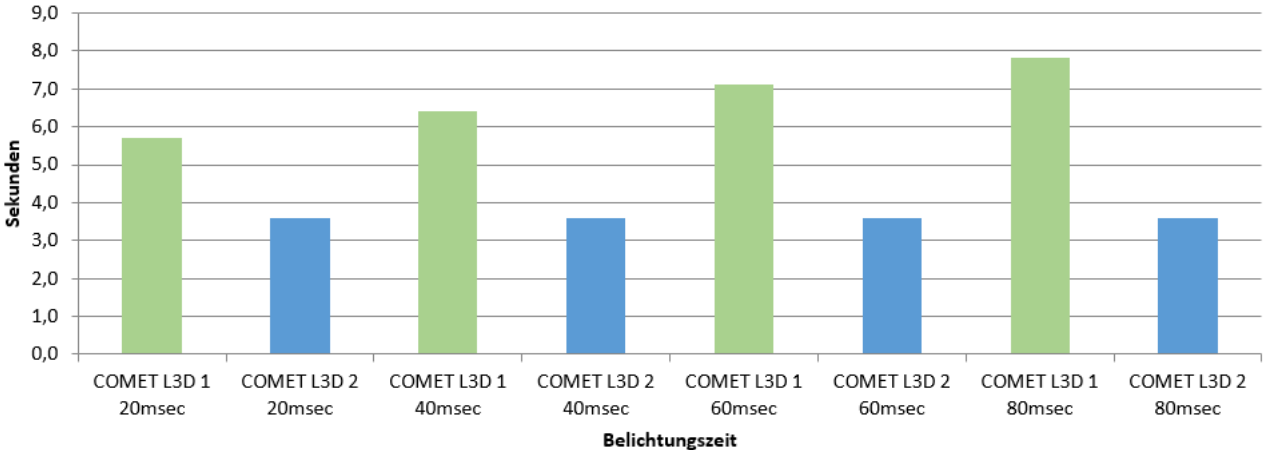


# ZEISS COMET L3D 2 5M – Ultra-Compact Sensor

## Simple and Quick 3D Measurement



**Comparison of measuring times ZEISS COMET L3D 1 / ZEISS COMET L3D 2**  
measurement mode HiRes  
exposure times 20 ms, 40 ms, 60 ms, 80 ms

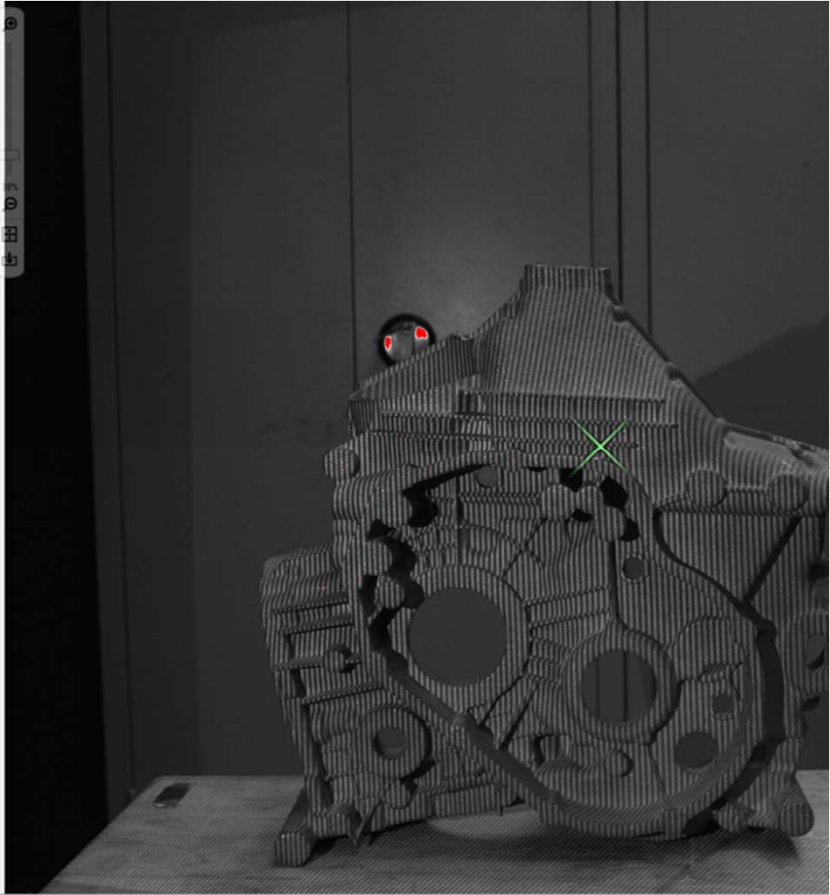
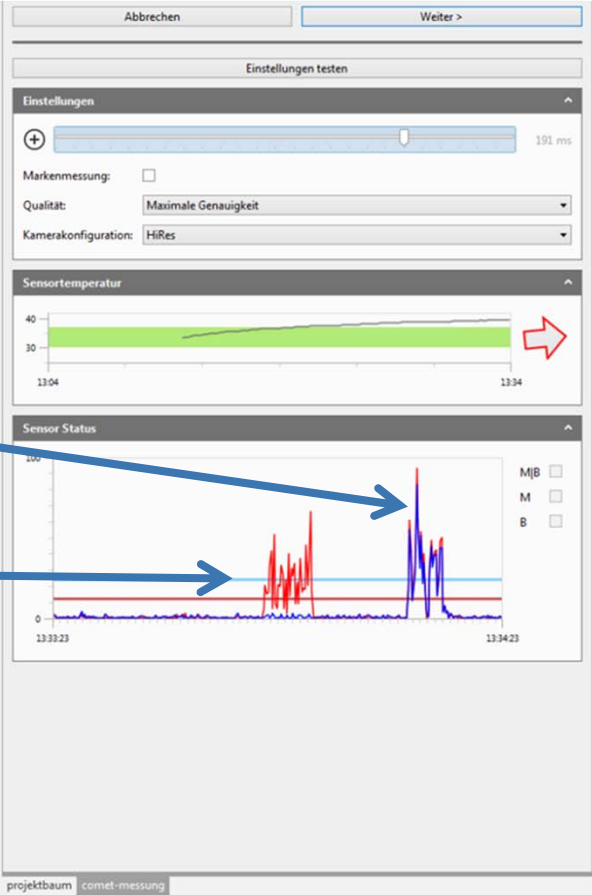


# ZEISS COMET L3D 2 5M / ZEISS colin3D Changes in Exposure and Vibration



Movement

Exposure



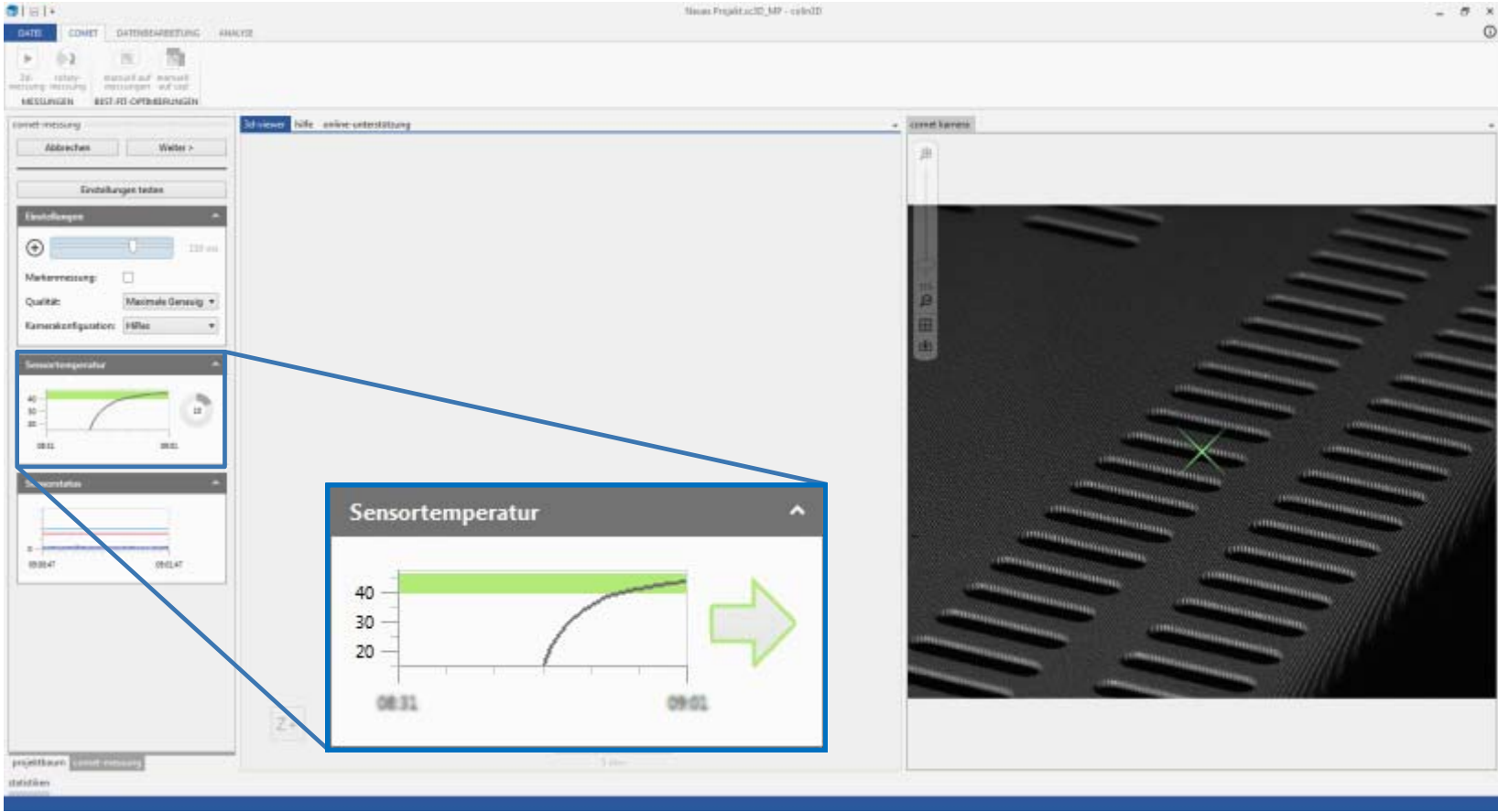
# ZEISS COMET L3D 2 5M – Ultra-Compact Sensor Simple and Quick 3D Measurement



- Temperature Management
  - Stable operating status of the components after switching on the system is required
  - Active heating of carrier structure
  - System is ready for calibration and measurement after warm-up time of 30 minutes



# ZEISS COMET L3D 2 5M Temperature Management



# ZEISS COMET L3D 2 5M – Ultra-Compact Sensor Simple and Quick 3D Measurement



- Designed for mobile and flexible use
  - Extremely compact sensor design
  - Simple on-site calibration for fast change of field-of-view
  - Low weight / high-quality transport container



# ZEISS COMET L3D 2 5M Fields-of-View



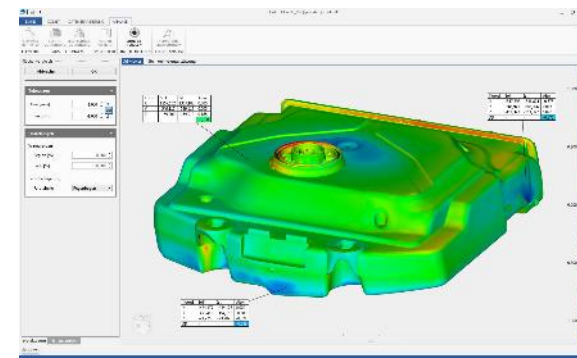
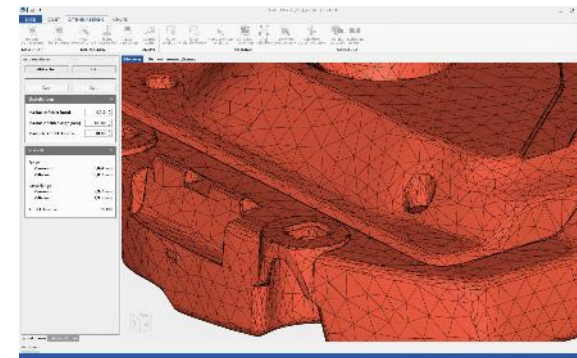
field-of-view	measurement volume	point distance in $\mu\text{m}$	working distance in mm
45 mm	45 x 38 x 30 mm <sup>3</sup>	18	760
75 mm	74 x 62 x 45 mm <sup>3</sup>	30	760
100 mm	118 x 98 x 60 mm <sup>3</sup>	48	760
250 mm	255 x 211 x 140 mm <sup>3</sup>	105	760
500 mm	481 x 404 x 250 mm <sup>3</sup>	196	760



# ZEISS COMET L3D 2 5M – Ultra-Compact Sensor Flexibility and Convincing Performance



- High precision for demanding applications
  - excellent data quality
  - high-precision measurement results
  - simple false color comparisons for individual analysis
  - protocol generation for documentation of measurement results





# ZEISS COMET L3D 2 – System Components



- Sensor
- FOV
- PC
  - Laptop
  - Desktop PC
- Handling system
  - Tripod stand
  - Foba stand
- Packaging
  - PELI case 1650



# ZEISS COMET - Accessories



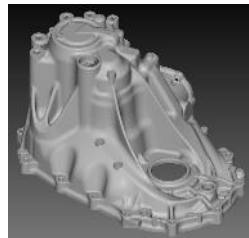
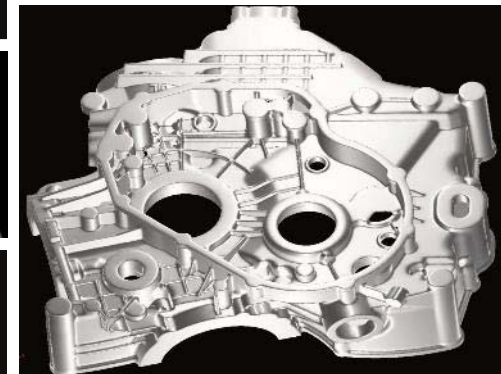
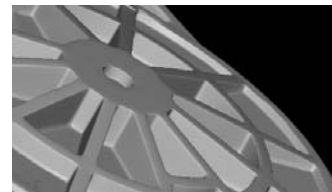
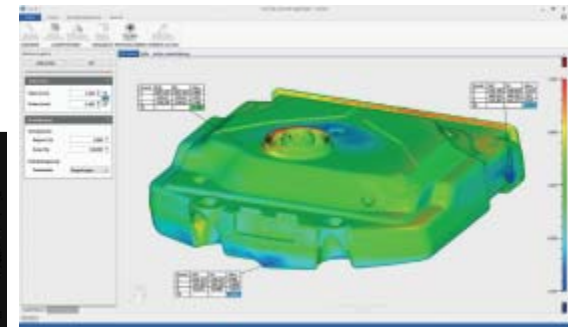
- Rotary tables:  
COMET rotary
- 100/400
  - 150/800



# ZEISS COMET L3D 2 - Wide Range of Applications



- Tool inspection
- Incoming goods inspection
- Dimensional analysis
- Inspection of casting parts and finished parts
- Inspection of casting molds
- Inspection of sheet metal parts
- Composite material tools
- Inspection of wing panels and car bodies
- Reverse Engineering
- CAD-based inspection
- Initial sample inspection
- In-process testing



# ZEISS COMET L3D 2 – Summary / Advantages



3D scanning system with decisive advantages for the user:

- High portability
  - Measurements on-site
- Easy handling
  - Also for inexperienced users
- One system with 5 different field of views
  - Maximum flexibility for a wide range of applications
- Blue LED Technology
- Best price-performance ratio



# Evaluation in ZEISS CALYPSO



CALYPSO 2015 Copyright © Carl Zeiss Ind

Datei Bearbeiten Ansicht Vorbere

Grundzustand: Funktion anwä

KMG Prüflplan Prüf...

- CT-Einstellungen
- Basis- / Startsystem  
Prüfplan 1
- Sicherheitsquader
- Mehrfach-Protokoll
- Prüfplan-Editor Mess
- Temperatur-Kompens

## ZEISS Calypso

**Prüfplan**  
Prüfplan 1

Zeichnungsnummer  
\* drawingno \*

Prüfer  
Master

Datum  
19. Januar 2016

Uhrzeit  
20:01:32

KMG  
CTSTL

Auftrag  
\* order \*

Teilnummer inkremental  
16

	Istwert	Sollwert	Obere Tol.	Untere Tol.	Abweichung
<b>Gesamtergebnis</b>					
Prüfmerkmale gesamt:					12
...in Toleranz:		3			
...außer Toleranz:		9			
...über Warngrenze:		0			
...nicht berechnet:		0			
Koord.systeme gesamt:		0			
...nicht berechnet:		0			
Textelemente gesamt:		0			
X-WertProjektion1	10.0610	10.0000	0.1000	-0.1000	--- 0.0610
Y-WertProjektion1	69.7229	70.0000	0.1500	-0.1500	-0.1271 -0.2771
Z-WertProjektion1	120.2177	120.0000	0.1500	-0.1500	0.0677 0.2177



We make it visible.