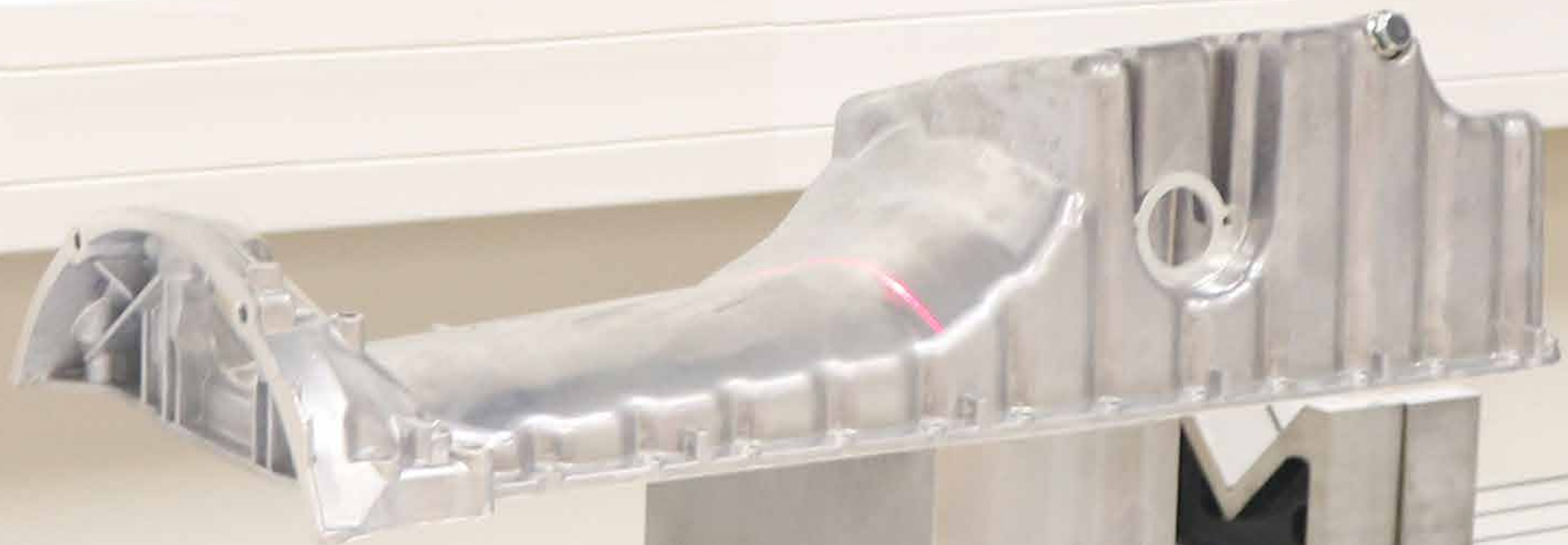




ZScan

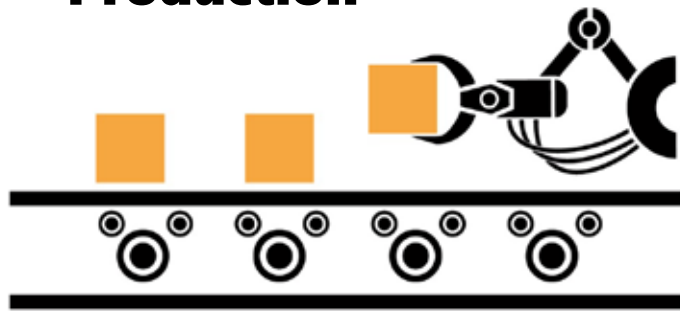
**3D MULTI SENSOR SCANNING
SYSTEM OF LARGE OBJECTS**





FAST, SIMPLE & FULLY AUTOMATED IN-LINE 3D INSPECTION

Production



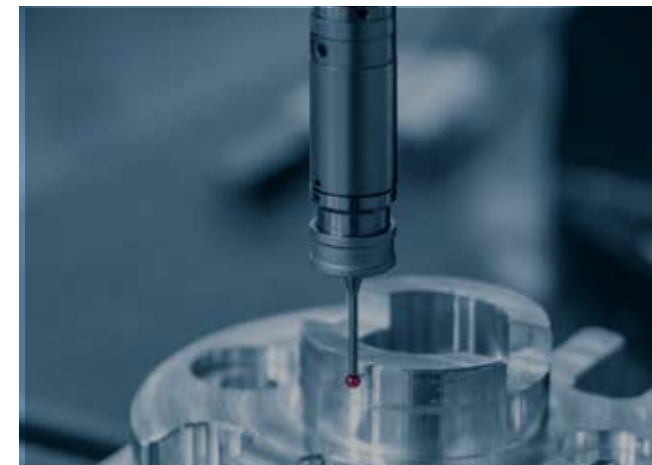
Current Workflow

Expert



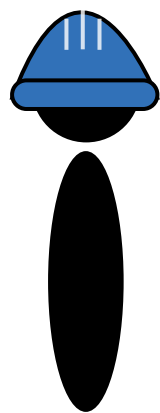
Speed vs μm

Separate Measuring Room



20+ minutes

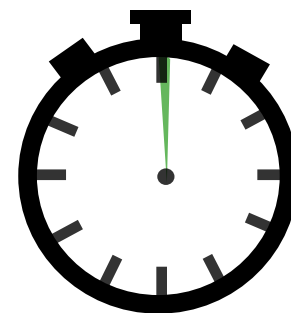
Attendant



Workflow with ZScan



8 seconds



**In-line
Measuring**

Expensive

**Short
ROI**

Product

**ZScan will change the world of
3D scanning in the production industry.**

Special Characteristics



HIGH-SPEED



ACCURACY



FLEXIBLE TO
OBJECT SIZE
& VOLUME



HIGH
RESOLUTION




COST SAVING



DATA QUALITY



STAND-ALONE
OR IN-LINE



EASY TO USE



FREE SPATIAL
ARRANGEMENT
OF 8 SENSORS

CAD
COMPARISON

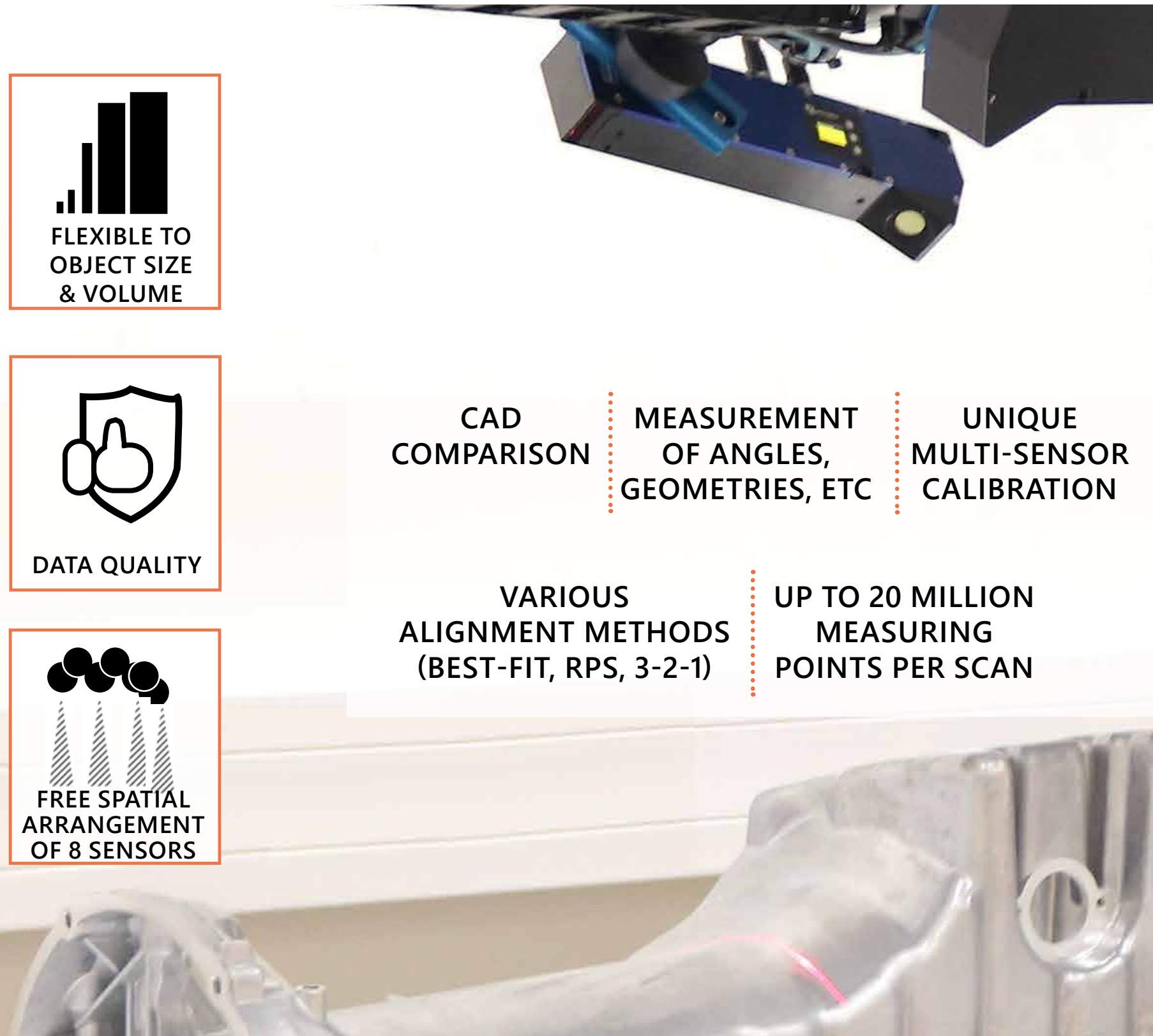
MEASUREMENT
OF ANGLES,
GEOMETRIES, ETC

UNIQUE
MULTI-SENSOR
CALIBRATION

VARIOUS
ALIGNMENT METHODS
(BEST-FIT, RPS, 3-2-1)

UP TO 20 MILLION
MEASURING
POINTS PER SCAN

- Seamless high-res 3D scanning
- Different axis configurations for a wide variety of applications
- Contains senswork VC 3D, one of the fastest 3D point cloud frameworks worldwide
- Optimized for fast data evaluation in inline processes
- The modular concept allows direct integration into a wide variety of manufacturing processes





ZScan

3D Multi-Sensor Scanning System of Large Objects



ZScan – Features

MULTI-SENSOR CALIBRATION

Calibrate the position of 3D scanners and the direction of transport, e.g. B. a conveyor belt. Inspect all point clouds in a global coordinate system.

AUTOMATIC ALIGNMENT

Automatic alignment of scan data on a reference object. The reference can be another scan or from a CAD model. The alignment is fully automatic and doesn't require any pre-alignment. Functions: RPS system, Best Fit, ..

SCAN TO CAD COMPARISON

Comparison of scan data against a wide variety of CAD formats. Color-coded display of the deviations.

GEOMETRIES

Find or fit 3D planes, lines, circles, spheres, cylinders and cones

in point clouds.

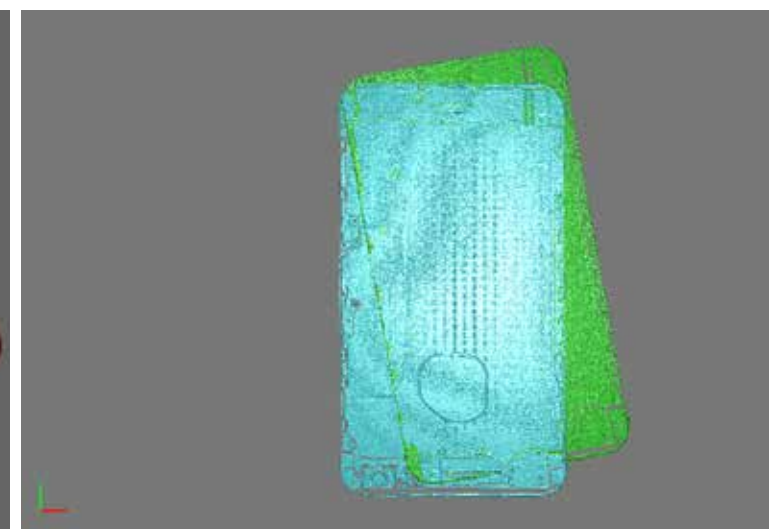
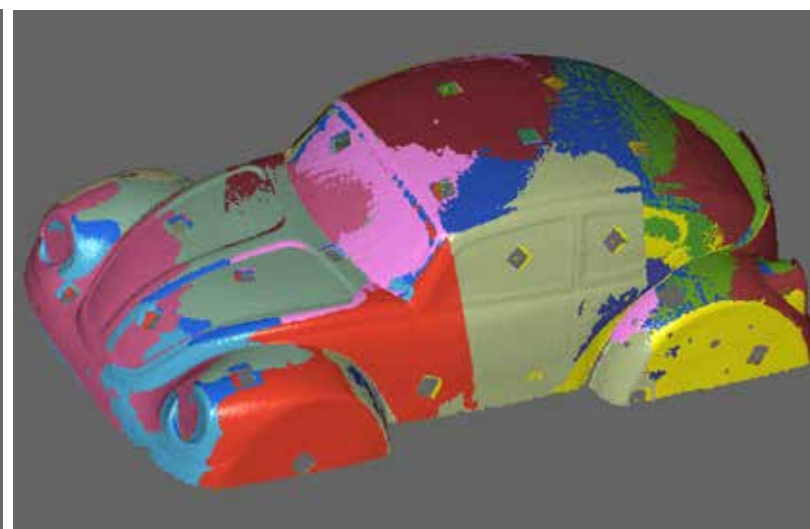
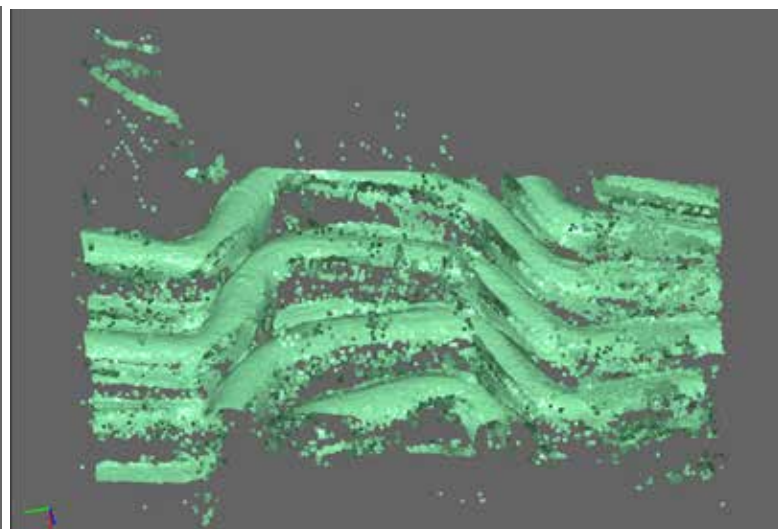
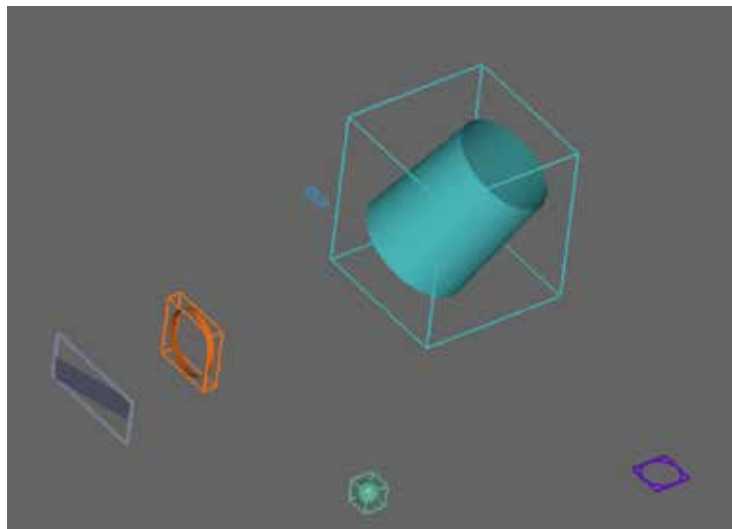
Measure distances, calculate intersections, projections or cuts.

EXTENSIVE FILTER FUNCTIONS FOR 3D POINT CLOUD PROCESSING

Spatial detection and elimination of outliers

REGISTRATION + TRIANGLE MESH CALCULATION

ICP (Iterative Closest Point) for multiple area scans and triangle mesh calculations





ZScan

3D Multi-Sensor Scanning System of Large Objects



ZScan 360 – Advanced Features

SCANNER FOR ROTATIONAL SYMMETRIC OBJECTS

With ZScan, also rotational symmetric parts can be measured automatically. Two or more lasers capture the parts to be inspected in three dimensions.

EXAMPLES

- 3D measurement of gears
- 3D measurement of stators
- 3D measurement of rotors

Ideal for rotational symmetric objects





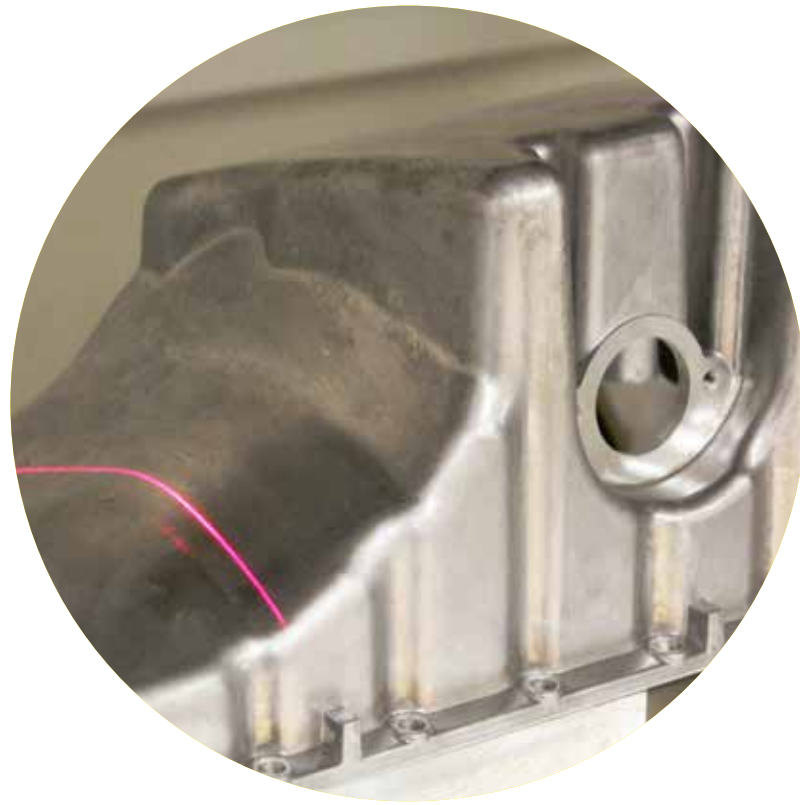
ZScan

3D Multi-Sensor Scanning System of Large Objects

With our clients' complex challenges in mind, we designed and developed our powerful and fast ZScan.



Range of Applications: **Automotive Industry**



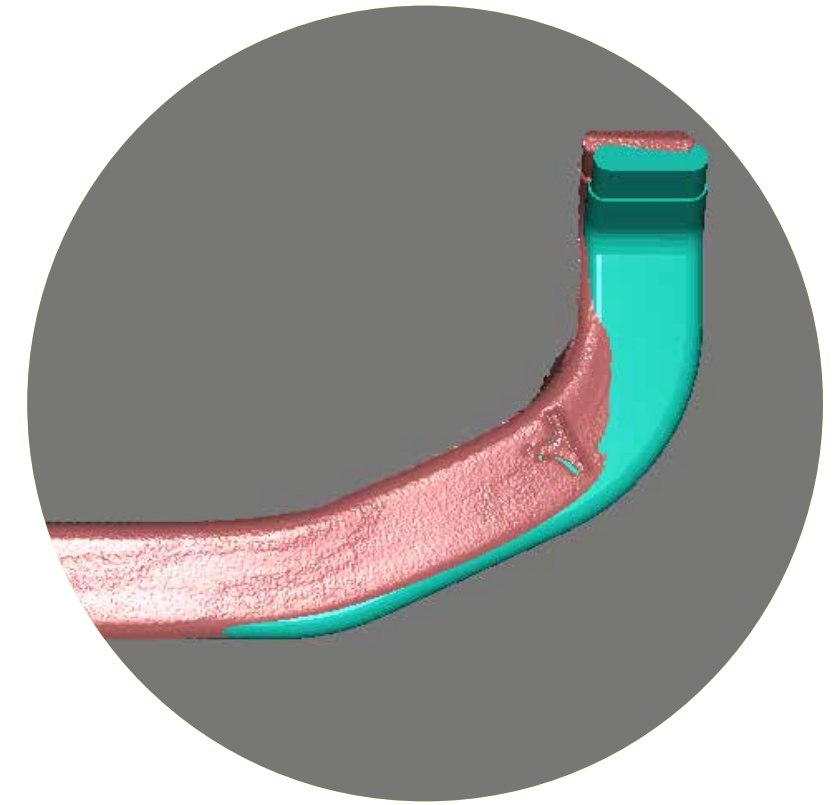
Die Cast Aluminium

3D Measurement



Stamped & Bent Parts

3D Measurement



Busbars

3D Measurement

- 3D measurement of large assemblies and comparison with CAD
- Determination of three-dimensional defects such as bubbles or blisters on vehicle body-in-white parts
- Determination of form deviations for manual or automatic straightening processes



ZScan

3D Multi-Sensor Scanning System of Large Objects



Range of Applications:

Food & Beverage Industry



- Volume determination of cut goods such as meat, fish, cheese, ...
- 3D data provision for cutting systems

Wood Industry



- 360° scanning of lengthways goods
- Scanning of block format goods without shading
- Volume determination and defect detection



ZScan

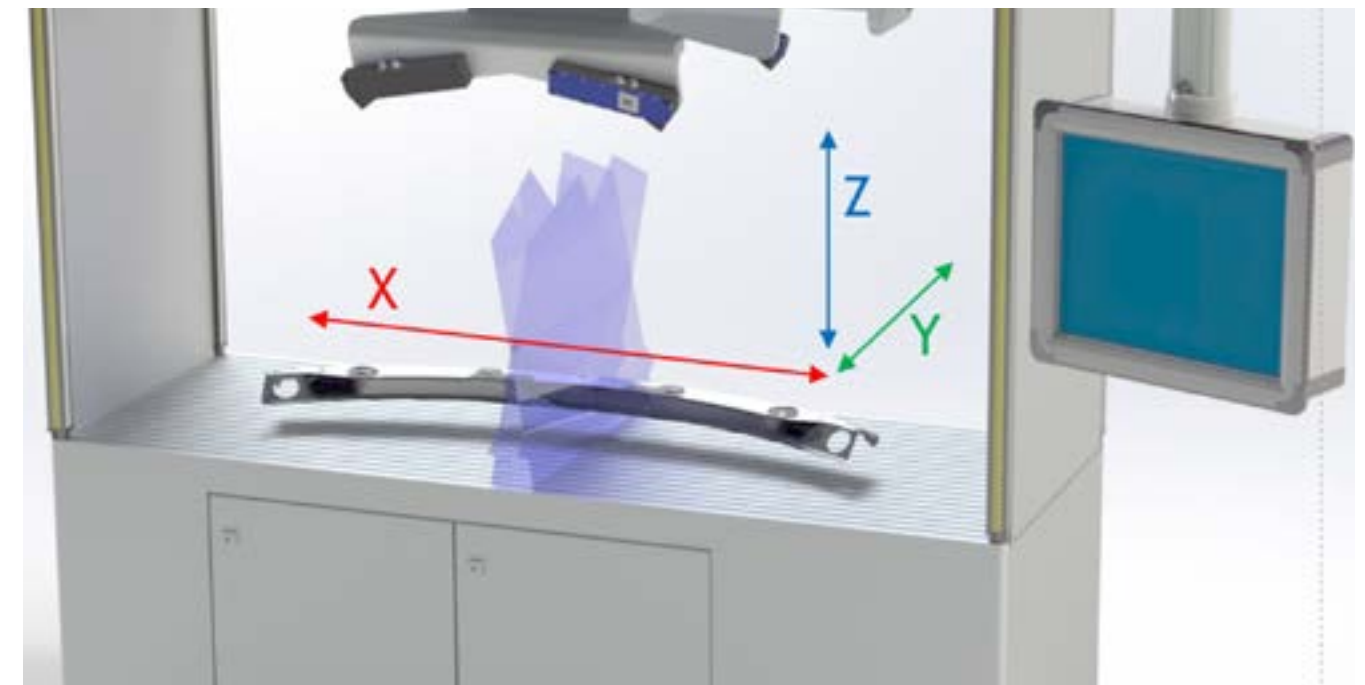
3D Multi-Sensor Scanning System of Large Objects



ZScan – Data Sheet

	ZScan S	ZScan M	ZScan L
Scan Volume X, Y, Z (X=Axial Direction, Y = Depth, Z = Height)	X _{max} : 2,000 mm Y = 300 mm Z = 200 mm	X _{max} : 3,000 mm Y = 700 mm Z = 500 mm	X _{max} : 6,000 mm Y = 1,000 mm Z = 1,000 mm
Resolution Z	23 µm	49 µm	87 µm
Resolution Y	60 µm	134 µm	205 µm
Auflösung X	Depending on the scan time Typical: 0.2 mm	Depending on the scan time Typical: 0.2 mm	Depending on the scan time Typical: 0.2 mm

The current ZScan can be configured differently to fit your needs.



3D Room Calibration for Multi-Sensor Systems

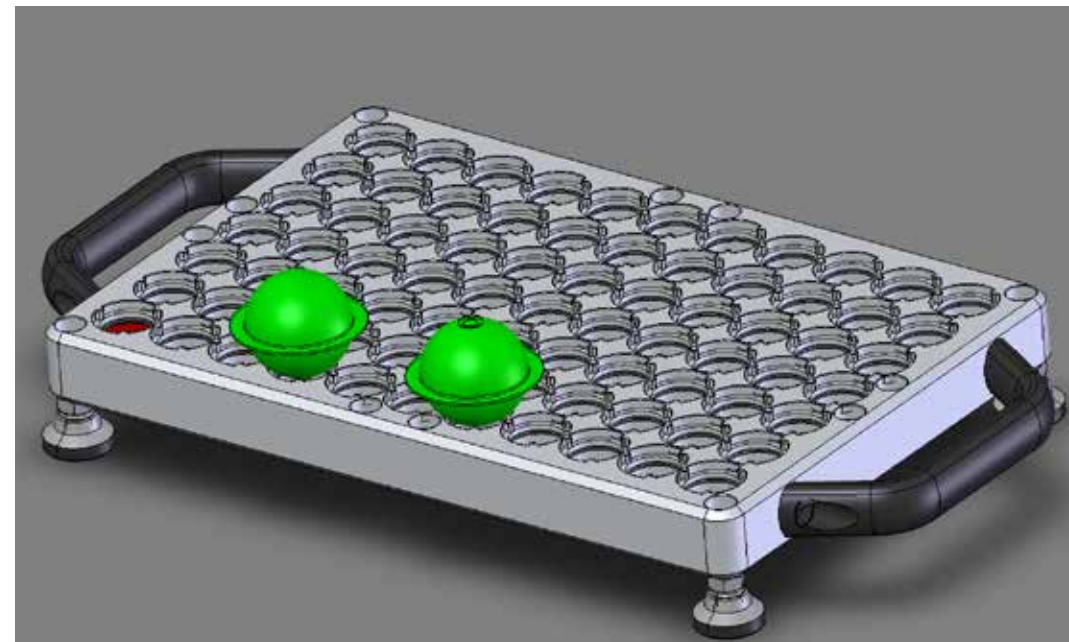
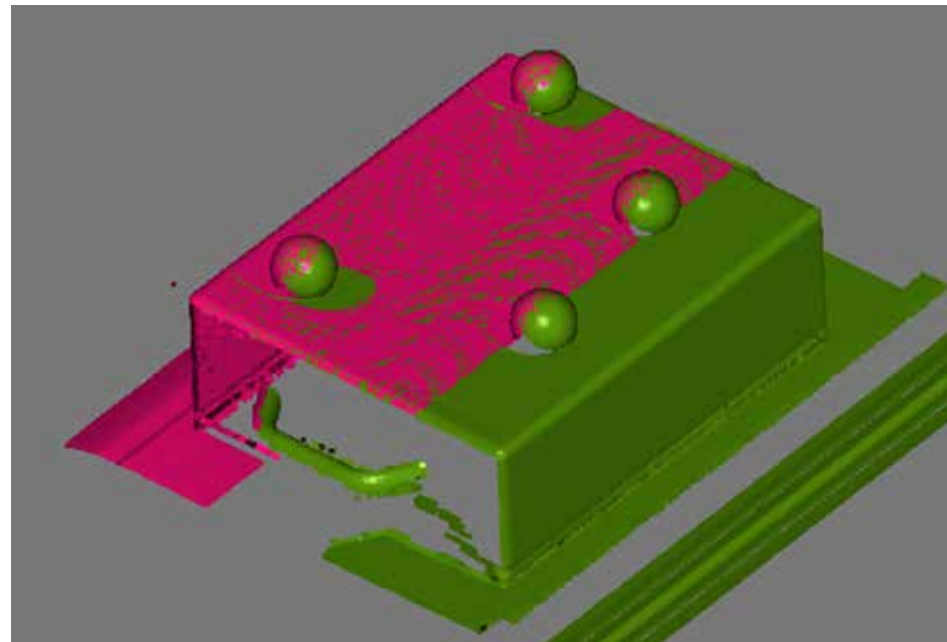
FEATURES

Our 3D calibration, developed especially for ZScan, using high-precision spherical targets, allows sensors to be calibrated with a free spatial arrangement and the scan data from up to 8 scanners to be combined spatially.

BENEFITS

- Virtually shadow-free 3D scans with a fixed sensor configuration
- Enlargement of the scan volume through multi-sensor arrays

Multi-sensor calibration for shadow-free, three-dimensional detection of large objects





ZScan

3D Multi-Sensor Scanning System of Large Objects



3D Metrology Framework: VisionCommander 3D



The screenshot displays the VisionCommander 3D software interface. The main window shows a 3D model of a part with various measurement points labeled with values like 0.121, 0.151, 0.172, etc. A color scale on the right indicates the range of values from -0.500 to 0.800. The interface includes a menu bar (File, PointCloud, RangeImage, TriangleMesh, LineSet, Geometry, Matrix, View, Build, Tools, Help) and a toolbar. A 'MetricsTool2' window is open, showing a 'comparison' tool with a 'cad' checkbox checked. A log window at the bottom left shows the following data:

```
[13:16:48.625] Running script
[13:16:48.801] * Calibration 00:00:00.0538555
[13:16:52.431] * Improvement 00:00:03.6303260
[13:16:52.433] * Merging 00:00:00.0019960
[13:16:54.020] * Comparison 00:00:01.4112270
[13:16:54.020] registration overlap: 0,994, quality: 0,705
[13:16:54.022] count: 104707
[13:16:54.022] mean: -0,124419
[13:16:54.022] min: -0,803364
[13:16:54.022] max: 1,999773
[13:16:54.022] sigma: 0,570294
```

High-performance 3D tools:

- Optimized for inline processes
- CAD comparison / best fit
- 3D geometry fit
- 3D measuring tools
- Alignment
- Import / export of various 3D formats



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