HEXAGON
MANUFACTURING INTELLIGENCE

AICON SCANNING SOLUTIONS
PORTABLE NON-CONTACT 3D MEASUREMENT
WITH AICON SCANNER TECHNOLOGY

AICON SCANNERS
OPTICAL PRECISION

For three-dimensional surface acquisition, fringe projection, also known as white light scanning, is a well-established and reliable technology. Using this non-contact optical scanning technique, even complex surface structures are captured swiftly and at a high level of accuracy.

Owing to its exceptional mechanical and thermal stability, AICON Scanner systems can be employed across a multifaceted array of applications. Extremely sturdy by design, these two-camera systems are renowned for their extraordinary combination of ruggedness and precision, allowing them to meet the challenges of modern metrology from the most sterile quality room to the dustiest shop floor.

AICON Scanner technology works with the AICON OptoCat software platform, turning the high-quality measurement information provided by the hardware into highly precise digital mesh data.

FRINGE PROJECTION: THE BASICS

AICON Scanner technology is based on the fringe projection working principle, in which a projector emits a sequence of fringe patterns onto the surface that is to be measured. High-resolution cameras are then used to capture the projection of this pattern at predefined viewing angles, and the resulting images are then analysed and used to derive highly accurate dimensional information about the measurement surface.

This means that a fringe projection system measures the entire surface of the measurement object, resulting in an exceptionally high measuring point density. This not only delivers extremely precise real measurement data but also a very high level of resolution.

Fringe projection systems are best suited for measurements in closed rooms where ambient conditions such as the temperature or light can be controlled. However, thanks to sophisticated, high-quality hardware and measuring strategies appropriate to the prevailing ambient conditions, these 3D scanning systems also work reliably in the open air.

Building on this working concept, AICON Scanners ensure effective and affordable measuring performance that is suitable for applications ranging from quality control to reverse engineering, while also encompassing applications in 3D printing medical technology or arts and cultural heritage.

SMOOTH METROLOGY

Under a fringe projection based system, an individual measuring sequence is completed within one-to-several seconds, depending on the reflectivity of the measuring object. The entire measuring process takes between a few seconds and several minutes. The process is completed as soon as images from all sides of the object have been captured.

Within seconds, the computer calculates the 3D data of the measuring object. In this step, the surfaces are processed, measurement noise is eliminated and data volume is decreased. The overall data quality, however, is not compromised.

Single scans are aligned by reference to the respective object geometry or with the aid of targets placed around the object before measurement. Subsequently, all single scans are merged to a single triangle mesh. This exact three-dimensional replica of the object is then available as a data set in various formats, compatible with any type of further processing programme.

DEFINING ACCURACY

Having a reliable basis for the stated accuracy of our AICON Scanner systems is vital. That's why we measure every AICON Scanner against the AICON Scanner Acceptance Test. Based on VDI/VDE Guideline 2634 Part 3, the AICON Scanner Acceptance Test uses four clear quality parameters to ensure users have full confidence in the accuracy of their AICON Scanner.

Sphere Spacing Error [SD]
Global quality parameter. Deviation from distance of fitted spheres to calibrated distance.
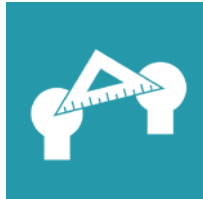
Length Measuring Error [E]
Global quality parameter. The deviation of the nearest points along the centre axis.

Probing Error Form [PF]
Local quality parameter. Deviation from the surface to a fitted sphere.

Probing Error Size [PS]
Local quality parameter. Deviation from the fitted sphere radius to the calibrated radius.

Key Advantages

- Short scanning times through fast digital projection

- Colour back-projection of measurement results

- Quick and easy exchange of measurement fields

- Scanning of glossy and dark surfaces without pretreatment

- Maximum degree of feature accuracy through high-resolution camera sensors

- Handheld probe option

- High-stability scanning

- Combinable with photogrammetry systems

- Accessories such as turntable and turn-tilt units allow for semi-automated scanning

AICON STEREOSCAN NEO
MEASUREMENT, VISUALISED

As an unrivalled high-end fringe projection system, the AICON StereoScan neo delivers superior resolution and accuracy alongside an array of innovative features that make visual scanning more comprehensive than ever before.

With the AICON StereoScan neo, Hexagon Manufacturing Intelligence delivers an innovative new feature: Variable Light Projection (VLP) technology. This adaptive full-colour projection technique enables not only projection of the colour patterns necessary for the scanning process onto the measurement object, but also projection of the generated measurement results. This allows for the deviations from CAD to be visualised in colour in the correct position on the surface of the scanned object immediately following measurement.

This innovative technology provides the user with totally new possibilities during work flow. In the tooling and moulding industry or in the context of model making, deviations of the component surface can be measured and visualised quickly and precisely. Based on the projected deviation images, corrections on the object can be made promptly and on site. In a similar way, deviations identified during inspections can immediately be made visible and rectified.

> The AICON StereoScan neo enables us to inspect complex 3D printed models in a very short time. That was simply not possible before. The user knows immediately whether or not he needs to rework and where. A significant time saving.

Gert Pistol
General Manager, Pistol, Germany

STEREOSCAN NEO
FULL CONTROL

Equipped with either 8- or 16-megapixel digital cameras, the AICON StereoScan neo offers the best configuration to deliver the maximum degree of detail. Measurement fields ranging from 75 to 1100 millimetres can be captured by changing the camera lenses and the base length. This innovative sensor technology makes the AICON StereoScan neo the most powerful and versatile white light scanner currently available.

And with intensity control, the AICON StereoScan neo provides another considerable advantage. Previously, the performance of fringe projection technology has been highly dependent on the surface properties of the object being scanned, with the reflection properties of the object's surface having a significant effect on the quality of measurement results. The digital adaptive full-colour projection technology of the AICON StereoScan neo provides the solution: intensity control feature that enables optimal adjustment of the fringe projection to the properties of the given measurement surface.

SYSTEM

	R8 8.0 MEGAPIXEL	R16 16.0 MEGAPIXEL
Camera sensor	Monochrome, CCD progressive scan 4/3"	Monochrome, CCD progressive scan, full format 1.7
Camera resolution	2 x 8 147 712 pixel (3296 x 2472)	2 x 15 720 448 pixel (4864 x 3232)
Projection unit	Digital projector	
Light source	3 x 100 W high-power LEDs (red + green + blue)	
Back projection accuracy	1/10 000 of the screen size	
Minimum measuring time	1 s	
Sensor weight	12 kg [1]	
Power supply	AC 110/230 V, 50-60 Hz, 600 W	
Control unit	Integrated, USB 3.0	
Operating system	Windows 10, 64 Bit	
Probing	Compatible with AICON MI.Probe mini	

SPECIFICATIONS

FIELDS OF VIEW R8

Outer camera position	Triangulation angle: 30° Base length: 450 mm Working distance: 840 mm			
Field of view [2]	L - 350 mm	L - 550 mm	L - 850 mm	L - 1100 mm
Field of view size [3]	280 x 210 mm	420 x 320 mm	700 x 560 mm	850 x 700 mm
Measuring depth [4]	176 mm	270 mm	430 mm	550 mm
X, Y resolution [5]	86 µm	128 µm	211 µm	256 µm
Sphere Spacing Error	10 µm	16 µm	30 µm	42 µm
Length Measuring Error	20 µm	28 µm	60 µm	84 µm
Probing Error Size	6 µm	12 µm	16 µm	21 µm
Probing Error Form	7 µm	12 µm	16 µm	18 µm

Inner camera position	Triangulation angle: 30° Base length: 150 mm Working distance: 350 mm		
Field of view [2]	S - 75 mm	S - 125 mm	S - 200 mm
Field of view size [3]	65 x 50 mm	100 x 75 mm	160 x 125 mm
Measuring depth [4]	36 mm	60 mm	100 mm
X, Y resolution [5]	20 µm	30 µm	49 µm
Sphere Spacing Error	5 µm	6 µm	8 µm
Length Measuring Error	10 µm	15 µm	18 µm
Probing Error Size	4 µm	6 µm	6 µm
Probing Error Form	5 µm	6 µm	6 µm

FIELDS OF VIEW R16

Outer camera position	Triangulation angle: 30° Base length: 450 mm Working distance: 840 mm			
Field of view [2]	L - 350 mm	L - 550 mm	L - 850 mm	L - 1100 mm
Field of view size [3]	285 x 190 mm	460 x 310 mm	710 x 500 mm	940 x 700 mm
Measuring depth [4]	176 mm	280 mm	430 mm	550 mm
X, Y resolution [5]	58 µm	94 µm	146 µm	193 µm
Sphere Spacing Error	10 µm	16 µm	30 µm	32 µm
Length Measuring Error	20 µm	28 µm	60 µm	64 µm
Probing Error Size	6 µm	12 µm	16 µm	18 µm
Probing Error Form	7 µm	12 µm	16 µm	18 µm

Inner camera position	Triangulation angle: 30° Base length: 150 mm Working distance: 350 mm		
Field of view [2]	S - 75 mm	S - 125 mm	S - 200 mm
Field of view size [3]	70 x 50 mm	90 x 60 mm	160 x 110 mm
Measuring depth [4]	20 mm	54 mm	100 mm
X, Y resolution [5]	15 µm	19 µm	33 µm
Sphere Spacing Error	5 µm	6 µm	8 µm
Length Measuring Error	8 µm	15 µm	18 µm
Probing Error Size	4 µm	6 µm	6 µm
Probing Error Form	5 µm	6 µm	6 µm

All fields of view (FOV) can be realised by using the same fundamental components, i.e. the system base, cameras and projection unit, through a simple change of the objectives (and of the CRP base, if necessary). In order to simplify the setup and calibration of the standard measuring ranges, they will only be provided with an individually prepared and tested set of lenses for each FOV. The lenses are delivered with a predefined factory setting for the aperture and focal depth, which are optimised for the corresponding FOV and do not need to be altered by the user.

[1] Weight may vary depending on the measuring fields.
[2] Designation of the scanner bases (S, L) and the diagonal in the centre of the measuring volume.
[3] Lateral expansion (X x Y) in the centre of the measuring volume.
[4] Depth of the measuring volume (Z).
[5] The values for the lateral resolution have been calculated theoretically (ratio of the size of the FOV and number of pixels of the camera chip).

Key Advantages

- Ideal introduction to high-end 3D metrology

- Fast and easy change of measuring fields

- Upgradeable modular system configuration

- Scanning of glossy and dark surfaces without pretreatment

- Mechanical and thermal stability

- Compact, low-weight design (4 kg), ideal for mobile use

- Handheld probe option

- Combinable with photogrammetry systems

- Accessories such as turntable and turn-tilt units allow for semi-automated scanning

AICON SMARTSCAN
POWERFUL AND COMPACT
3D SCANNING

Fast and highly accurate, the AICON SmartScan is among the leading measurement solutions for complex surface geometries and fragile or deformable parts where portability is a necessity.

The non-contact optical scanning technology of the AICON SmartScan enables very fast data acquisition at a high level of detail. The scanner's compact design and low weight allow for fully mobile usage, including within challenging workshop conditions. Even under the demands of temperature fluctuation, the scanner maintains extremely stable and reliable performance, based on its carbon-fibre structure.

Available in various system configurations, the AICON SmartScan ensures effective and affordable measurement performance across applications including quality control, reverse engineering and rapid prototyping.

> Combining the AICON SmartScan with a turntable, we can also carry out automated measurements, which saves time and allows us to carry out semiautomatic inspections of very complex parts."

Adam Dubowski
Quality Inspector, KarT, Poland

SMARTSCAN
QUICK AND EASY DIGITISATION

With the AICON SmartScan, objects are digitised within seconds, irrespective of their size and complexity, and are directly available as high-precision 3D data in numerous standard formats for further processing.

SYSTEM

	R5 5.0 MEGAPIXEL	R12 12.0 MEGAPIXEL
Camera sensor	Monochrome CCD progressive scan, 2/3"	Monochrome CMOS, 1.1"
Camera resolution	2 x 5 041 312 pixel (2452 x 2056)	2 x 12 368 896 pixel (4112 x 3008)
Projection unit	Miniaturised projection technique	
Projection resolution	28 723 200 pixel (6144 x 4675)	28 723 200 pixel (6144 x 4675)
Light source	100 W high-power LED	
Min. measuring time	1 s	
Sensor weight	4 kg	
Power supply	AC 110/230 V, 50-60 Hz, external, 150 W	
Control unit	External, USB 2.0	
Operating system	Windows 10, 64 Bit	
Probing	Compatible with AICON MI.Probe mini	

All fields of view (FOV) can be realised by using the same fundamental components, i.e. the system base, cameras and projection unit, through a simple change of the objectives (and of the CRP base, if necessary). In order to simplify the setup and calibration of the standard measuring ranges, they will only be provided with an individually prepared and tested set of lenses for each FOV. The lenses are delivered with a predefined factory setting for the aperture and focal depth, which are optimised for the corresponding FOV and do not need to be altered by the user.

[1] ANSI Lumen describes the value of the luminosity output of the light source adapted to the camera sensitivity.
[2] Designation of the scanner bases (S, M, L) and the diagonal in the centre of the measuring volume. The camera positions which are determined by using different CRP (carbon-fibre reinforced plastic) bases are called scanner bases.
[3] Lateral expansion (X x Y) in the centre of the measuring volume.
[4] Depth of the measuring volume (Z).
[5] The values for the lateral resolution have been calculated theoretically (ratio of the size of the FOV and number of pixels of the camera chip).

SPECIFICATIONS

FIELDS OF VIEW R5

	Triangulation angle: 30° Base length: 470 mm Working distance: 1000 mm			
Field of view [2]	M - 125 mm	M - 200 mm	M - 500 mm	M - 850 mm
Field of view size [3]	105 x 85 mm	160 x 130 mm	380 x 310 mm	650 x 565 mm
Measuring depth [4]	66 mm	100 mm	244 mm	420 mm
X, Y resolution [5]	43 μm	64 μm	153 μm	266 μm
Sphere Spacing Error	10 μm	11 μm	22 μm	44 μm
Length Measuring Error	20 μm	22 μm	44 μm	88 μm
Probing Error Size	7 μm	9 μm	11 μm	22 μm
Probing Error Form	7 μm	8 μm	11 μm	22 μm

	Triangulation angle: 30° Base length: 240 mm Working distance: 370 mm		Triangulation angle: 20° Base length: 470 mm Working distance: 1500 mm	
Field of view [2]	S - 60 mm	S - 125 mm	L - 750 mm	L - 1550 mm
Field of view size [3]	50 x 40 mm	100 x 80 mm	560 x 470 mm	1200 x 750 mm
Measuring depth [4]	30 mm	60 mm	360 mm	750 mm
X, Y resolution [5]	20 μm	40 μm	230 μm	485 μm
Sphere Spacing Error	5 μm	7 μm	61 μm	220 μm
Length Measuring Error	10 μm	14 μm	122 μm	440 μm
Probing Error Size	6 μm	7 μm	31 μm	110 μm
Probing Error Form	5 μm	7 μm	31 μm	110 μm

FIELDS OF VIEW R12

	Triangulation angle: 27° Base length: 470 mm Working distance: 1000 mm			
Field of view [2]	M - 350 mm	M - 450 mm	M - 750 mm	M - 1000 mm
Field of view size [3]	285 x 205 mm	380 x 275 mm	590 x 435 mm	825 x 630 mm
Measuring depth [4]	180 mm	240 mm	370 mm	500 mm
X, Y resolution [5]	69 μm	92 μm	143 μm	201 μm
Sphere Spacing Error	16 μm	20 μm	30 μm	44 μm
Length Measuring Error	36 μm	40 μm	60 μm	88 μm
Probing Error Size	9 μm	10 μm	15 μm	22 μm
Probing Error Form	9 μm	10 μm	15 μm	22 μm

	Triangulation angle: 29° Base length: 260 mm Working distance: 500 mm			
Field of view [2]	SL - 90 mm	SL - 200 mm	SL - 300 mm	SL - 500 mm
Field of view size [3]	70 x 55 mm	145 x 105 mm	240 x 160 mm	420 x 325 mm
Measuring depth [4]	44 mm	90 mm	144 mm	250 mm
X, Y resolution [5]	17 μm	35 μm	57 μm	102 μm
Sphere Spacing Error	6 μm	9 μm	12 μm	21 μm
Length Measuring Error	15 μm	18 μm	24 μm	42 μm
Probing Error Size	6 μm	6 μm	8 μm	15 μm
Probing Error Form	6 μm	6 μm	8 μm	15 μm

Key Advantages

- Compact and low-weight design

- Short working distance ideal for applications in narrow environments

- Various fixed configurations for diverse range of measuring tasks

- High-resolution sensor technology for maximum detail

- Scanning of glossy and dark surfaces without pretreatment

- Handheld probe option

- Combinable with photogrammetry systems

- Accessories such as turntable and turn-tilt units allow for semi-automated scanning
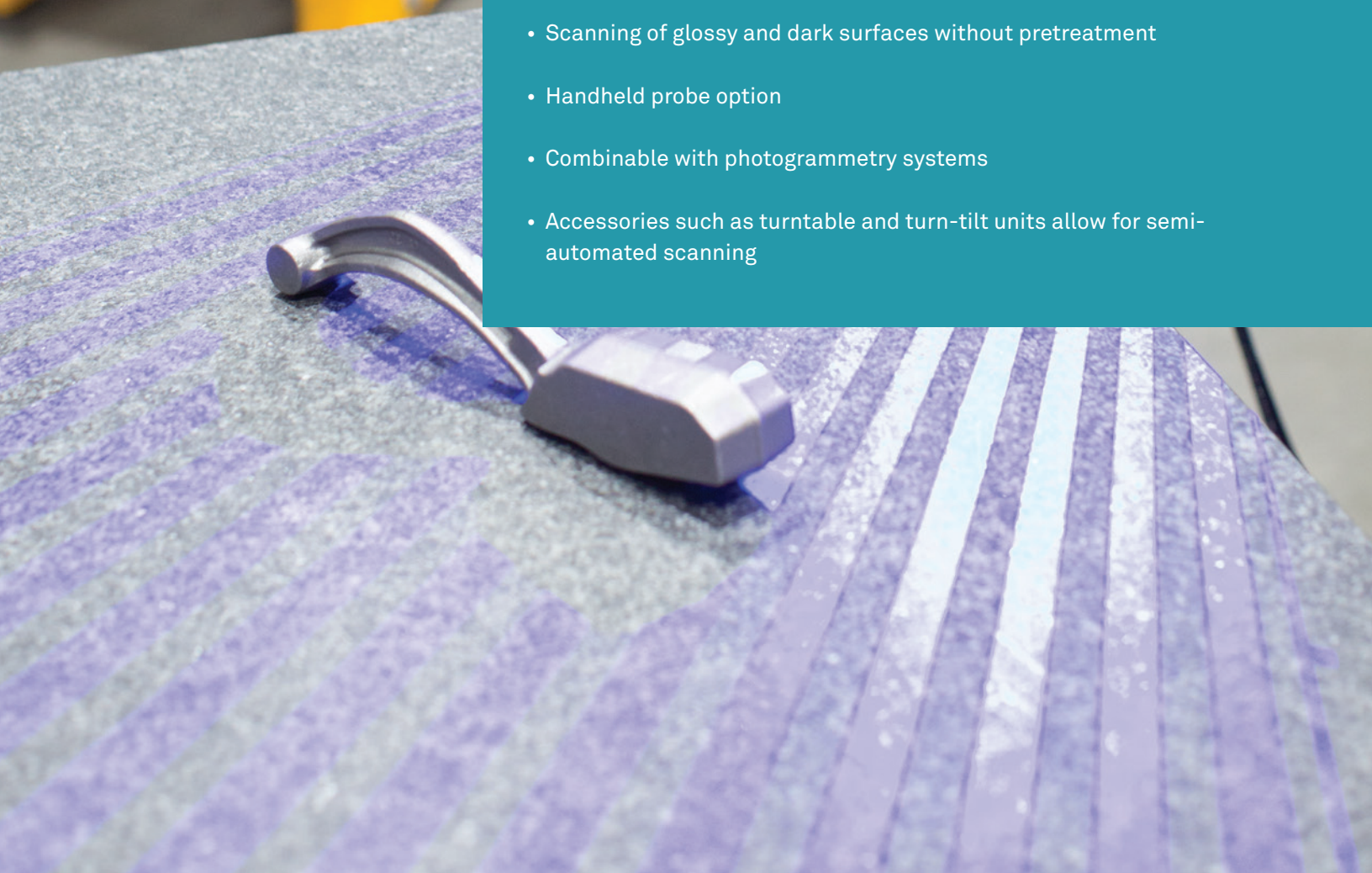
AICON PRIMESCAN
SCANNING MADE SIMPLE

The AICON PrimeScan scanner line from Hexagon Manufacturing Intelligence is an attractive entry-level solution for highly precise 3D digitisation of industrial components. Like the classic high-end AICON Scanner product lines, the AICON PrimeScan is based on fringe projection technology that provides the strongest luminous power and highest projection quality.

The scanner boasts an extremely compact design, with the base area of the unit the size of an A4 sheet of paper, while it weighs less than four kilograms. This condensed layout is combined with a short working distance, making the AICON PrimeScan the ideal device for easy and uncomplicated scanning in special application areas, such as on a desktop or in a narrow and difficult to access part of an industrial environment.

The particularly powerful projector of the AICON PrimeScan allows for the scanning of glossy and dark surfaces without pretreatment, while the scanner's integrated laser pointers support the easy positioning of the measuring object. Selected robots and accessories enable both automated measurement and easy data acquisition within larger volumes.

" The high luminous power and the best projection quality delivered by the fringe projection technology of the AICON PrimeScan allows us to complete our quality inspection and ensures a complete check of all our parts."

Mr. Kawata,
Quality Manager, Zeno Tech, Japan

PRIMESCAN
CONFIGURED FOR EVERY APPLICATION

Depending on the required resolution and precision, different camera resolutions and measuring fields are available for the AICON PrimeScan. The scanner is available in eight fixed configurations, allowing users to select the perfect tool for their particular digitisation task.
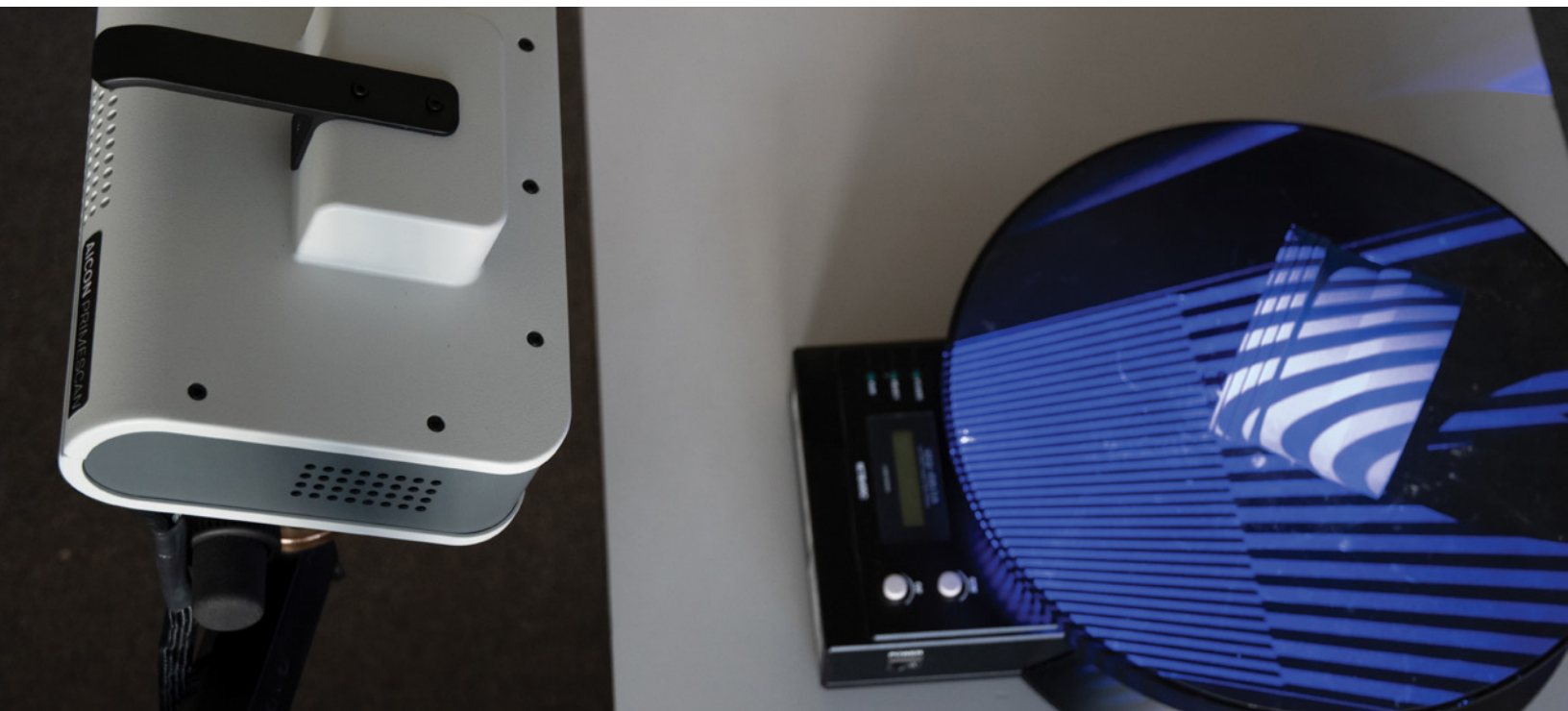
SYSTEM

	R5 5.0 MEGAPIXEL	R8 8.0 MEGAPIXEL
Camera sensor	Monochrome, CMOS 2/3"	Monochrome, CCD 1"
Camera resolution	2 x 5 013 504 pixel (2448 x 2048)	2 x 7 990 272 pixel (3264 x 2448)
Projection unit	Miniaturised projection technique	
Projection resolution	28.723.200 pixel (6.144 x 4.675)	
Light source	100 W high-power LED (blue)	
Min. measuring time	1 s	
Sensor weight	3.8 kg [1]	
Power supply	AC 110/230 V, 50-60 Hz, external, 150 W	
Control unit	Integrated, USB 3.0	
Operating system	Windows 10, 64 Bit	

SPECIFICATIONS

FIELDS OF VIEW R5

	Small Working Distance Triangulation angle: 26° Working distance: 370 mm				Large Working Distance Triangulation angle: 18° Working distance: 540 mm
Field of view [2]	50 mm	125 mm	200 mm	400 mm	700 mm
Field of view size [3]	40 x 30 mm	100 x 80 mm	150 x 125 mm	300 x 275 mm	500 x 450 mm
Measuring depth [4]	24 mm	64 mm	100 mm	200 mm	350 mm
X, Y resolution [5]	16 μm	40 μm	63 μm	125 μm	208 μm
Sphere Spacing Error	4 μm	7 μm	12 μm	20 μm	56 μm
Length Measuring Error	10 μm	16 μm	24 μm	40 μm	112 μm
Probing Error Size	6 μm	6 μm	6 μm	10 μm	28 μm
Probing Error Form	4 μm	6 μm	7 μm	10 μm	28 μm

FIELDS OF VIEW R8

	Small Working Distance Triangulation angle: 26° Working distance: 370 mm		Large Working Distance Triangulation angle: 18° Working distance: 540 mm
Field of view [2]	100 mm	450 mm	650 mm
Field of view size [3]	80 x 60 mm	350 x 290 mm	500 x 400 mm
Measuring depth [4]	50 mm	222 mm	320 mm
X, Y resolution [5]	27 μm	109 μm	155 μm
Sphere Spacing Error	6 μm	25 μm	52 μm
Length Measuring Error	14 μm	50 μm	104 μm
Probing Error Size	8 μm	13 μm	26 μm
Probing Error Form	6 μm	13 μm	26 μm

All fields of view (FOV) are an integral part of the system: their configuration cannot be changed. Each field of view is delivered as a separate device.

[1] Weight may vary depending on the measuring fields.
[2] Each field of view (FOV) denotes a different scanner.
[3] Lateral expansion (X x Y) in the centre of the measuring volume.
[4] Depth of the measuring volume (Z).
[5] The values for the lateral resolution have been calculated theoretically (ratio of the size of the FOV and number of pixels of the camera chip).

AICON DPA SERIES
TEAM PLAYERS

Combining leading AICON Scanner and photogrammetry technology is an unrivalled way to achieve high-accuracy 3D digitisation results on large measurement objects.

Photogrammetry Meets Fringe Projection

The measuring volume captured by an AICON Scanner ranges from a few millimetres to about one metre across. By combining this technology with a photogrammetry system, considerably larger freeform areas can also be captured at the highest level of detail. The AICON DPA Series photogrammetry systems can provide the basis for highly accurate measurement results when used in combination with AICON Scanner technology.

How It Works

First, targets are used to signal reference points on the object. A digital camera then takes photos from a variety of directions and angles. From this data, a point cloud that can be used as a reference system is created. Single surface scans made by an AICON Scanner are then matched into this reference system. Especially in the measurement of large objects, this integrated technology provides more reliable and much more precise global coordinates in the component's coordinate system.

TURN TO AUTOMATION

While delivering significant benefits, measurement automation is often a complex and costly process involving expensive robot systems and custom software solutions. An alternative to this is found by combining AICON Scanner technology with turntable or turn-tilt units that allow a scanner to access every side of the measurement object without repositioning. Using this technique, all relevant areas of the object can be captured while minimising the number of single exposures.

In this way, a simple turntable or turn-tilt unit allows an AICON Scanner to deliver fully automated, highly precise inspection and digitisation of small-to-medium sized components. The repeatable accuracy of such a system enables a usefully reproducible process that represents a cost-effective and flexible alternative to a robot. It is lighter and therefore more portable, and does not require training, while also offering a significant reduction in maintenance costs.

# AICON OPTOCAT
A SCANNING SOFTWARE SOLUTION

From 3D scanner calibration and data capture through to post-processing and evaluating measurement data, AICON OptoCat from Hexagon is all the software needed for three-dimensional surface digitisation.

Featuring a diverse range of metrology functions, the innovative AICON OptoCat modular software package allows users to develop a personally configured setup best suited to the needs of their specific measurement task.

SIMPLE DATA HANDLING

AICON OptoCat has a user interface that is both intuitive and easy to use. Within the software, individual scans are automatically aligned and merged, with or without photogrammetric targets. The program uses intelligent algorithms to evaluate the geometric and radiometric features of the scanned object, so there is no longer any need to align the individual scans to each other manually.
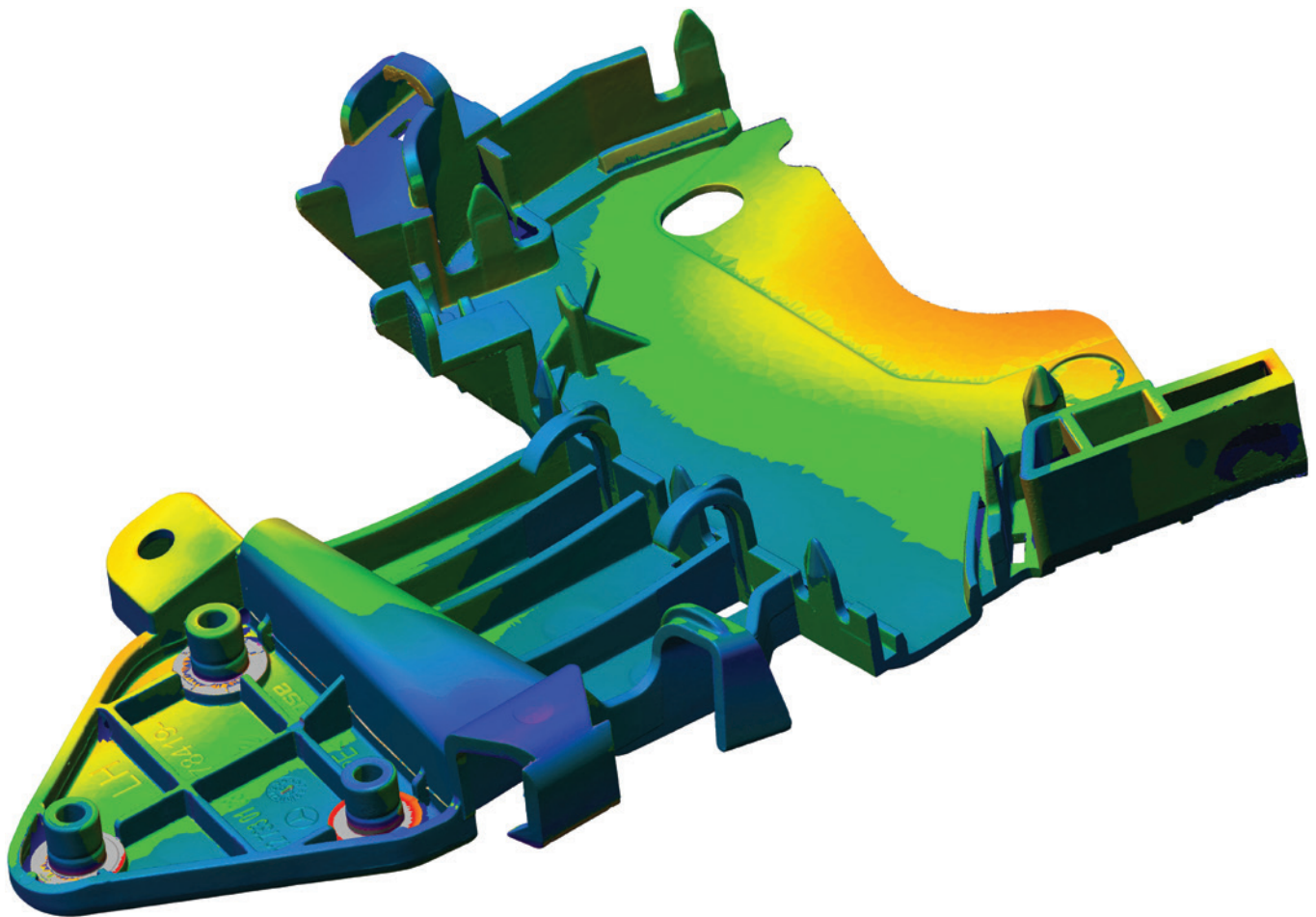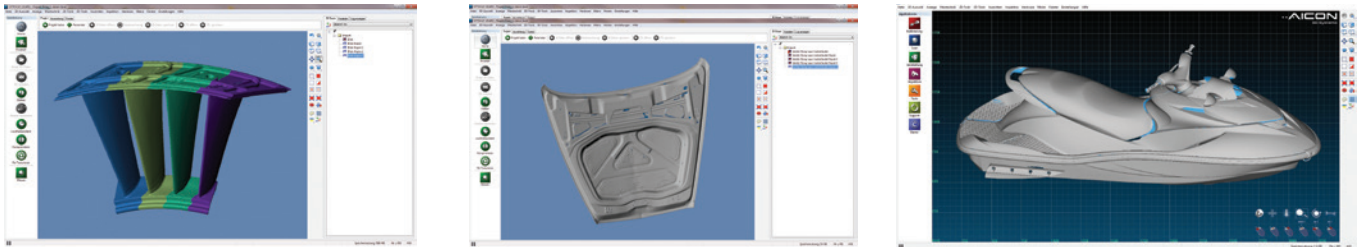
POST-PROCESSING MADE EASY

Inbuilt OptoCat functions make it easier to post-process captured 3D data, including functions such as flattening, compressing and optimising meshes, texturing, and data export. In addition to performing its own inspection, the program has an option to link directly to PolyWorks® for an optimised, interactive and/or automatic evaluation.

Measurement results can be compared directly or to imported CAD data. The software offers various functions for data analysis, edge extraction and other post-processing steps. Scan data can also be exported into a variety of formats for further processing.

TEXTURE MAPPING

The AICON OptoCat Texture Mapping module enables the capturing and mapping of the texture (colour and pattern) of a scanned object to its digital 3D representation. This feature is interesting for users who require a high-resolution texture for their generated 3D data. Texture mapping can be carried out with the internal imagery of the 3D scanner or with images taken with external cameras (including multispectral data such as UV or IR), as well as with data from previous scanning projects.

The Texture Mapping workflow is easy and largely automated, with a purpose-built algorithm mapping high-resolution colour information to each triangle of the scanned object with sub-pixel accuracy. The texture resolution is independent from the resolution of the object's 3D data, allowing the creation of a reduced triangle mesh while maintaining a high-resolution texture. The 3D data can be opened and processed in a range of common data export formats.

MEASUREMENT, VISUALISED

For measurements taken with the AICON StereoScan neo, OptoCat enables the option of a back projection of the measurement results in full colour, directly onto the measurement object. Deviations from the CAD can be mapped onto the object surface directly after scanning, depicted as a false colour representation. The user can then instantly identify where corrections need to be made.

FULL AND PARTIAL AUTOMATION

AICON OptoCat allows scanning processes to be manual, partially automated or fully automated. Whether it is a simple turntable, a turn-tilt unit, or even a robot-supported scan, a full range of automation steps is supported by AICON OptoCat.

OPTOCAT MODULAR STRUCTURE

STANDARD MODULES

Calibration	Calibration of the scanner using a certified reference
Contour Matching	Alignment of the individual scans via object geometry
Target Matching	Alignment of the individual scans via target, with or without photogrammetry
Automatic Matching	With a turntable or a turn-tilt unit
Data Processing	Filling in holes, compressing, filtering
Basic Inspection Functionalities	Basic functions for data analysis, data comparison. Various alignment strategies: automatic and manual pre-alignment; shape alignment using Best-Fit; Best-Fit via reference points; 3-2-1; plane-line-point.

ADD-ON MODULES

Ext. Ref. Matching (DPA add-on)	Photogrammetry for precise recognition of targets and for alignment with predefined reference point clouds
MI.Probing	For tactile measurements with the AICON MI.Probe mini, supplied with MI.Probe accessories
CAD Data Import	Importing of various CAD formats: STEP, IGES, Catia V4, V5, V6
Back Projection	Colour back projection of test results and information onto the measurement object
Automated Sensor Control	Mechanical adapter, reference object and software for integration of an AICON sensor into an external positioning system (e.g. coordinate measuring machine, milling machine)
KUKA Robot KR-C4	Software for operating an AICON StereoScan neo in combination with a KUKA Robot (KR-C4 controller), including reference object for alignment of the coordinate system and reinforcement board for the scanner
FANUC Robot R-30iB	Software for operating an AICON StereoScan neo in combination with a Fanuc Robot R-30iB, including reference object for alignment of the coordinate system and reinforcement board for the scanner
Texture Mapping	Capturing and transfer of the texture (colour and pattern) of an object to its scanned 3D data

OTHER FUNCTIONS

- Data import: STL, PLY, CTR, IGES | IGS, STEP | STP, PRT, MODEL, VDA, OBJ, ASCII | ASC, SDF
- Data export: STL, PLY, CTR, OBJ, ASCII | ASC, SDF
- Inspection functions, scalable incorrect colour depiction for deviations from other data, fitting and comparison with various basic shapes (e.g. plane, cylinder, sphere)
- Construction: multi-cuts, distances, angles
- Various user levels available
- Interface with PC-DMIS, Inspire, PolyWorks® and Geomagic Verify™ for automatic inspection
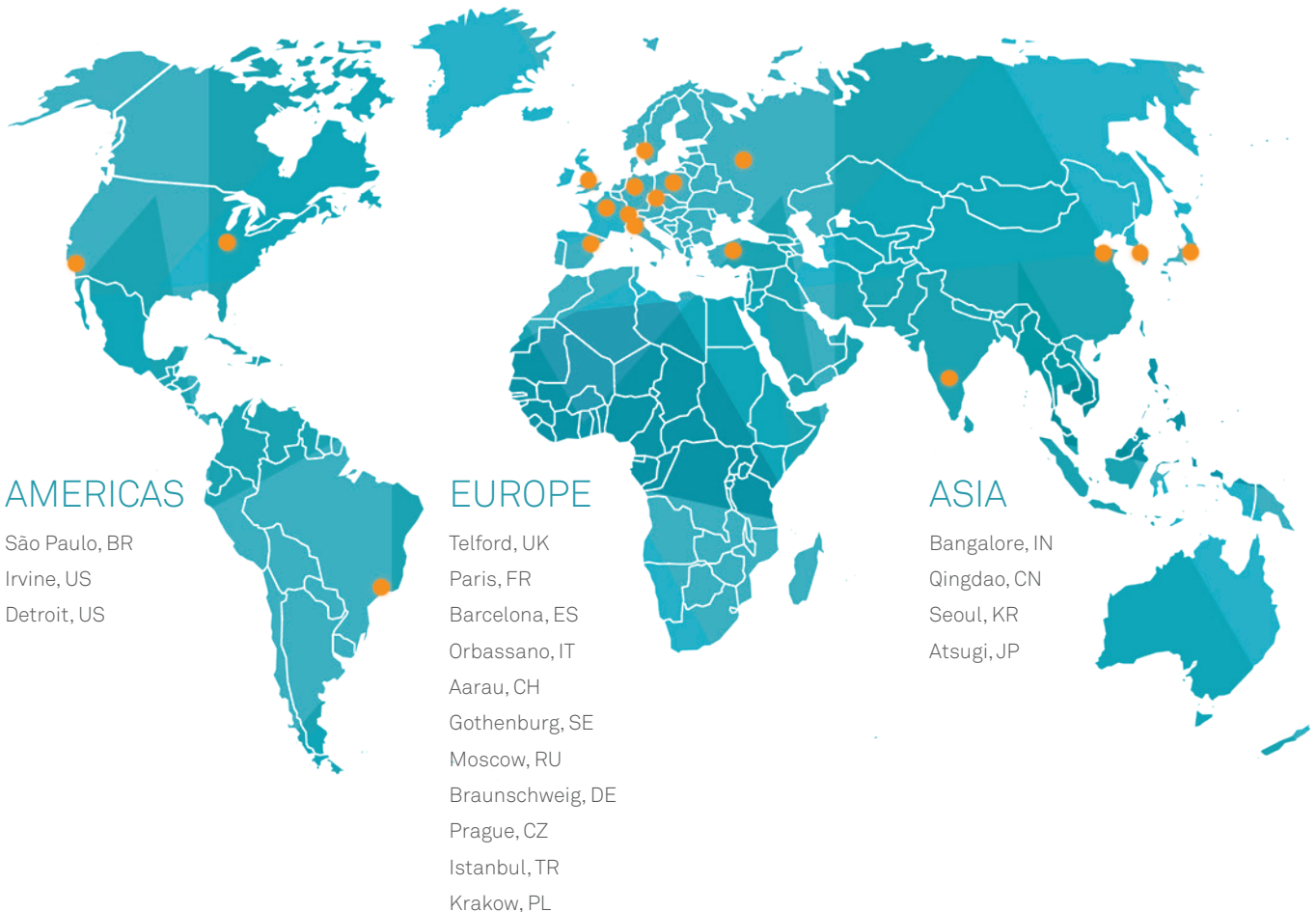
QUALITY ACROSS THE GLOBE
LEADING TOOLS WITH LEADING SUPPORT

Drawing on decades of research and development experience, AICON Scanner technology from Hexagon Manufacturing Intelligence is built on a long history of outperforming technological innovation. Deriving quality from experience to drive productivity is what keeps Hexagon in front and able to deliver first-class solutions for industries around the world.

The international presence of Hexagon guarantees comprehensive aftersales support and services across the globe. With the largest dedicated service team of any metrology equipment manufacturer and an emphasis on locally delivered solutions, Hexagon is unmatched from service, repair, certification and calibration through operator training and software maintenance and upgrades.

Along with the assurance of ten years of serviceability, owners of systems in Hexagon's AICON Scanner range benefit from a full 12-month factory warranty – our guarantee that our technology will always meet the needs of our users.

Hexagon Manufacturing Intelligence Service Centres

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Bangalore, IN
Qingdao, CN
Seoul, KR
Atsugi, JP

HEXAGON
MANUFACTURING INTELLIGENCE

Hexagon Manufacturing Intelligence helps industrial manufacturers develop the disruptive technologies of today and the life-changing products of tomorrow. As a leading metrology and manufacturing solution specialist, our expertise in sensing, thinking and acting – the collection, analysis and active use of measurement data – gives our customers the confidence to increase production speed and accelerate productivity while enhancing product quality.

Through a network of local service centres, production facilities and commercial operations across five continents, we are shaping smart change in manufacturing to build a world where quality drives productivity. For more information, visit **HexagonMI.com**.

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SENSORS

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