



ATS800 New Developments

IWAA 2026 KEK Tsukuba, Japan



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Laser Trackers



Agenda

Introduction

Upside-down, Tilted & Robot mounting

Reduced motor set for special setups

Availability

ATS800 in other research areas

Edge Feature

Noise Filtering

Scanning Speed Improvements

Mirror Measurements



Absolute Tracker ATS800

Introduction

Portable devices portfolio



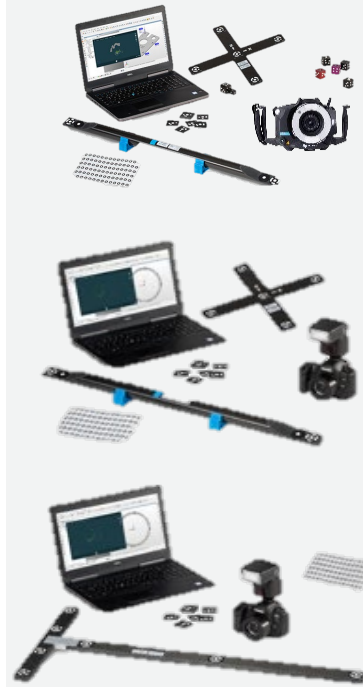
Multi-purpose measurement

Portable Measuring Arms



Large-volume measurement

Laser Trackers



Large-volume parts &
deformation analysis

Photogrammetry



Tube inspection and
production optimisation

Tube & Wire solutions



Complete freedom & dynamic
scanning device

Handheld 3D Scanners

Absolute Trackers | Portfolio

Laser trackers



Leica Absolute Tracker **AT930 | AT960**

Flagship laser tracker
AIFM – 1000 Hz
Reflector | Probing
Scanning | Automation

Leica Absolute Tracker **AT500**

Absolute portability
ADM – 100 Hz
Reflector | Entry-level probing

Direct scanning laser trackers



Leica Absolute Tracker **ATS800**

High-end laser tracker and scanner
TruePoint Interferometer – 2000 Hz
Reflector | Direct feature, edge and
surface scanning



Leica Absolute Tracker **ATS600**

Laser tracker and scanner
WFD – 1000 Hz
Reflector | Direct surface scanning

First instrument combining laser tracker and radar technology

Measurements on SMRs

- Dynamic tracking
- PowerLock
- Build & inspect applications

Accurate contactless measurements

- Specified according to ISO10360-10 $\pm 21 \mu\text{m} + 8.5 \mu\text{m/m}$
- Patented TruePoint technology for accurate high AOI measurements
- Measurement of features, edge, and surfaces
- Dynamic focusing

Absolute Tracker platform

- $\pm 140^\circ$ Vertical angle coverage
- Same accessories
- 1arsec leveling accuracy

Large volume

- 0.6m-40m measurement range
- $\pm 140^\circ$ Vertical angle coverage
- 360° Horizontal coverage
- Mounting in any orientation



Absolute Tracker ATS800 | Highlights

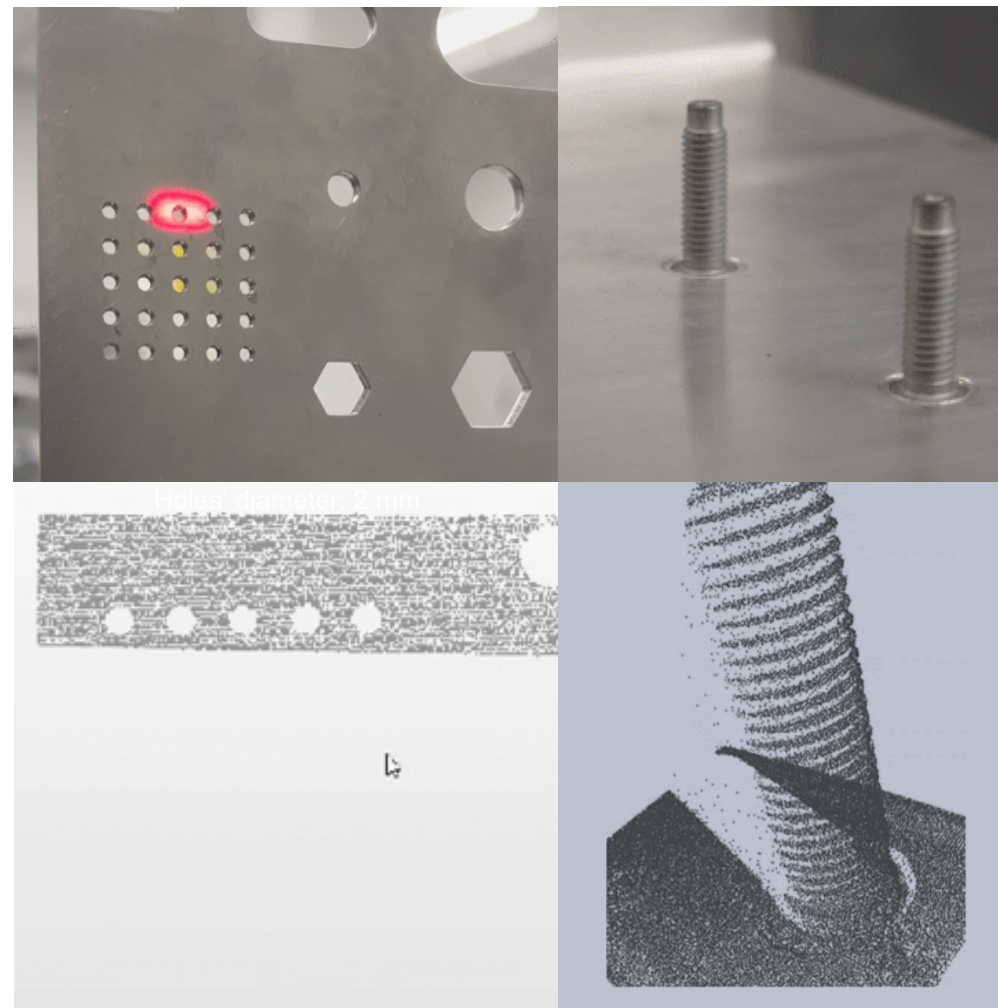
HIGH QUALITY | Detailed scan

High quality scan data

Enables reliable inspection of fine edges, assembly features, fasteners and surfaces.

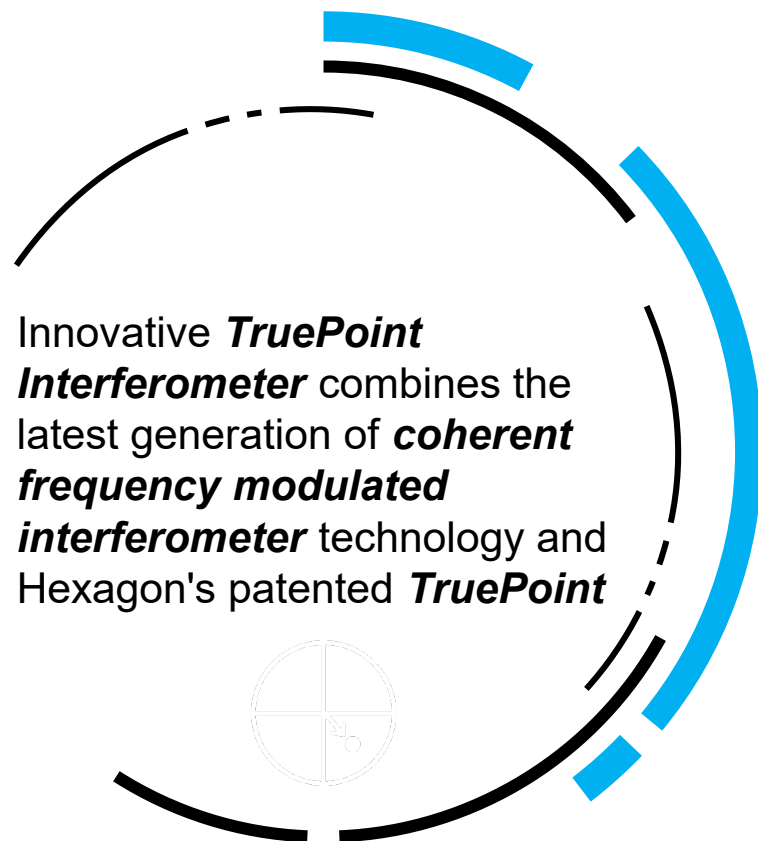


Using our innovative
TruePoint Interferometer

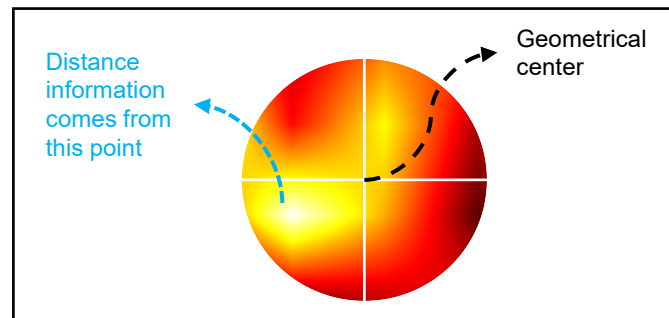


Absolute Tracker ATS800 | Highlights

HIGH QUALITY | TruePoint Interferometer

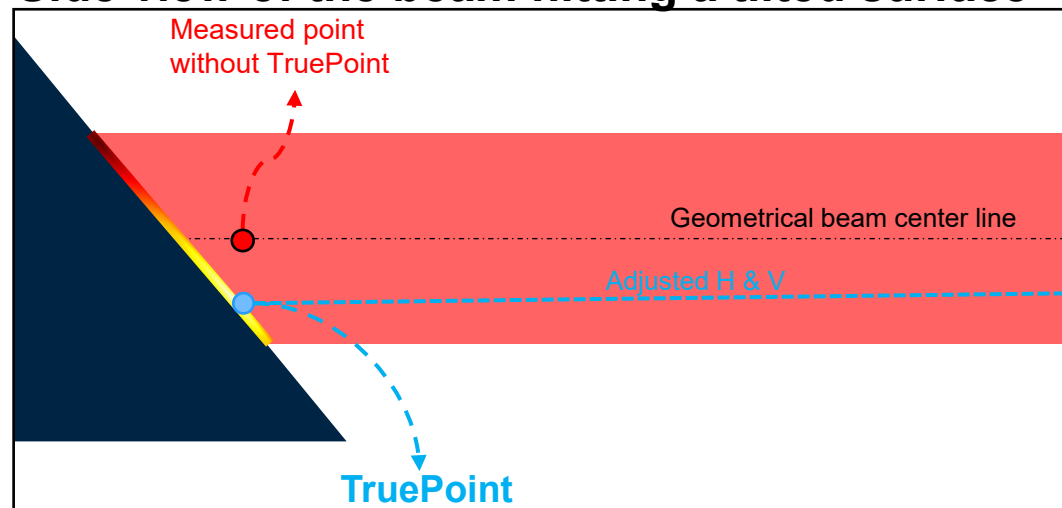


Internal detector view



Random interferences happen when measuring a surface with any laser based instrument. As a result the actual measured distance is decentered. TruePoint addresses this issue by pinpointing the true center of the measurement and adjusting the H & V angular values accordingly.

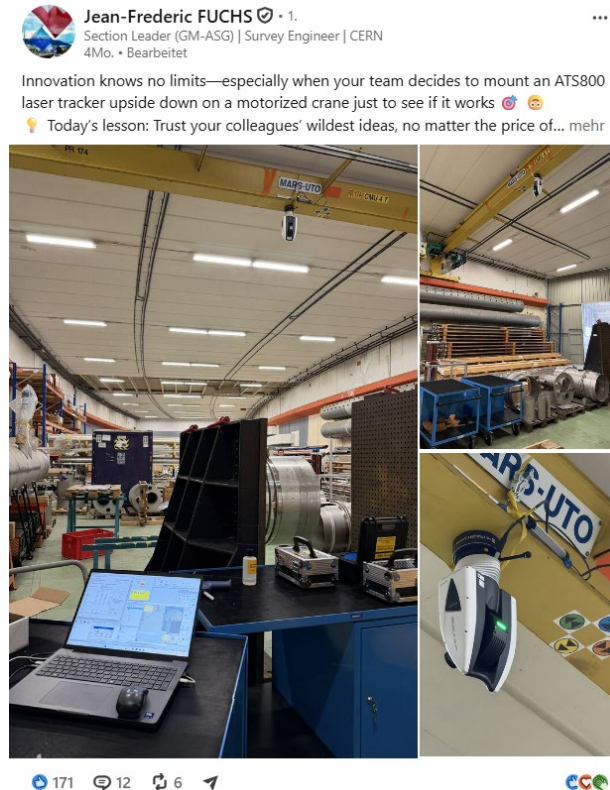
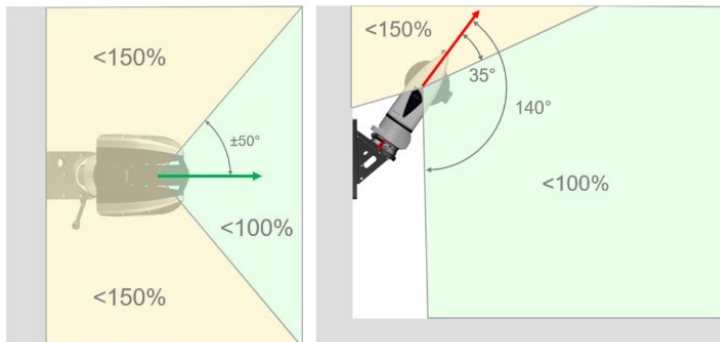
Side view of the beam hitting a tilted surface



Upside-down, Tilted & Robot Mounting

Non-Upright Mounting

- Non-upright mounting generally supported with ATS800
- Fall protection is provided with MAS80/MAS81 console
- 90° mounting is possible, but not recommended
- Settling time for 2 hours is recommended after mounting
- If possible, perform Axes Compensation & Scan Axes Compensation
- Upside-down: Typical < 100% MPE in entire volume
- 35° tilted: Typical < 150% to < 100% MPE depending on direction of compensation, measurement window



Source: <https://lnkd.in/p/eFj2WFf9>



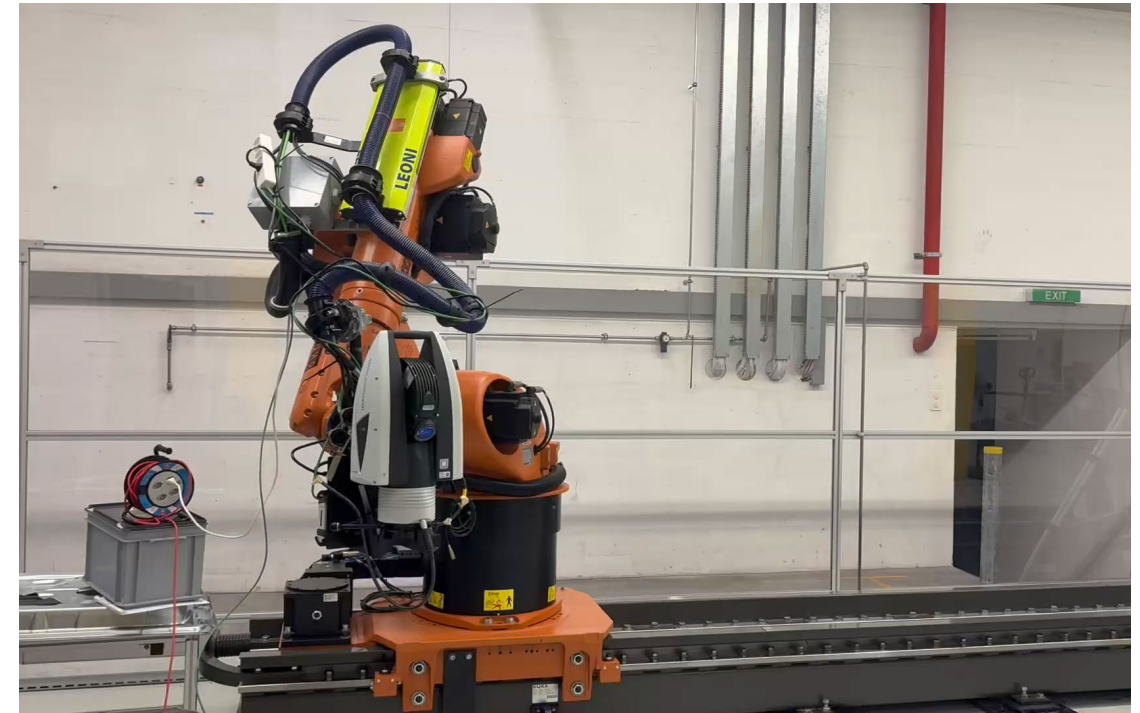
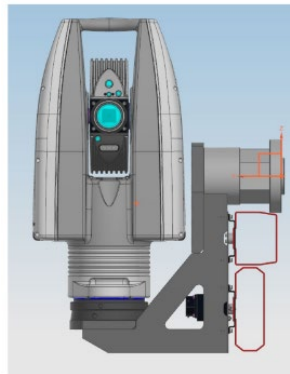
MAS80



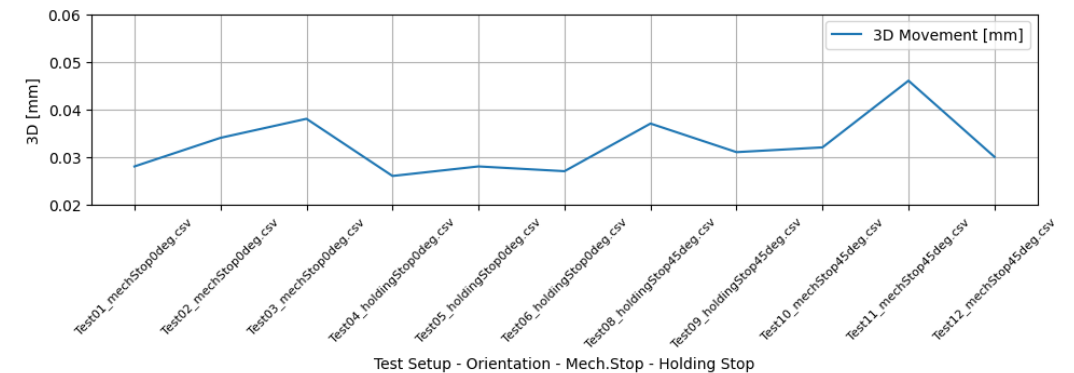
MAS81

Robot Mounting

- ATS800 mounted on KUKA KR30 HA robot
- Dedicated Tracker robot mount, available as sales article in 2027
- Waiting time of approx. 3 seconds is recommended after re-positioning
- Stability investigations – two face measurements over 10 mins
- Observable drift approx. 20 – 50 μm , depending on robot pose
- Further investigations in progress

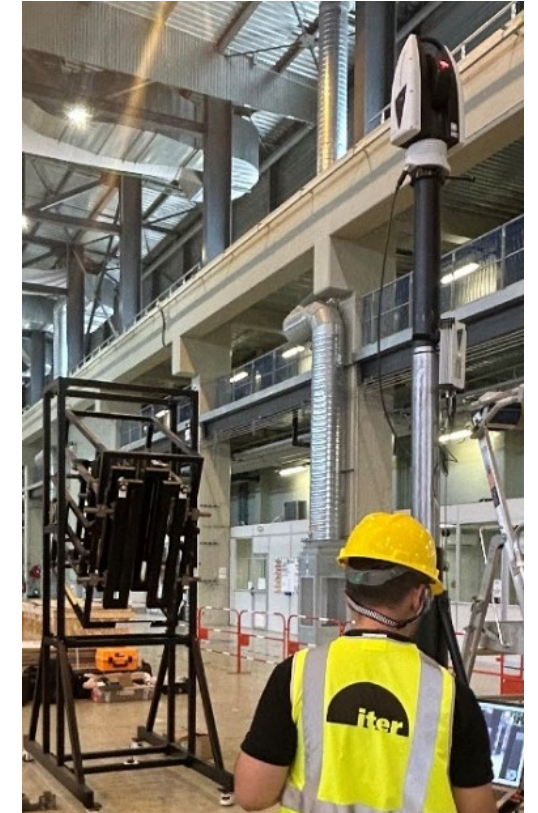
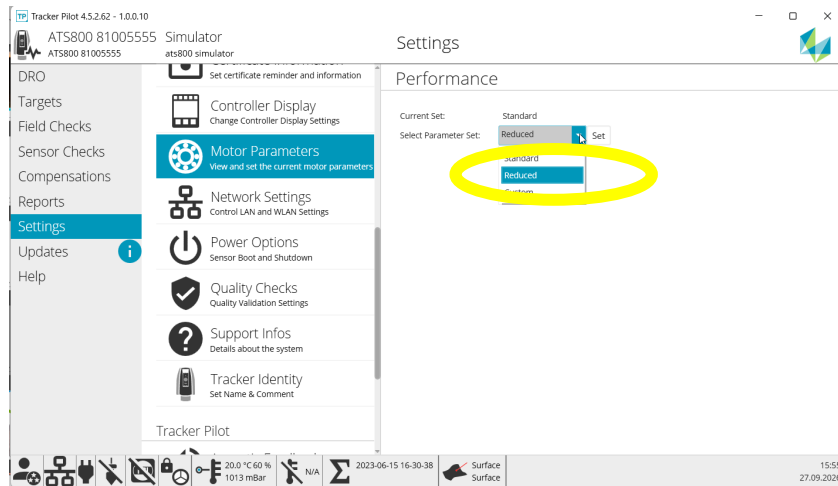


ATS800 on Robot Stability Results



Reduced Motor Parameters

- Released with System Software 1.0.2 in July 2026
- Recommended for non-standard setups if sensor vibrates (sensor produces humming noise)
- Scanning trajectories are slightly different
- No influence on scanning results



Availability

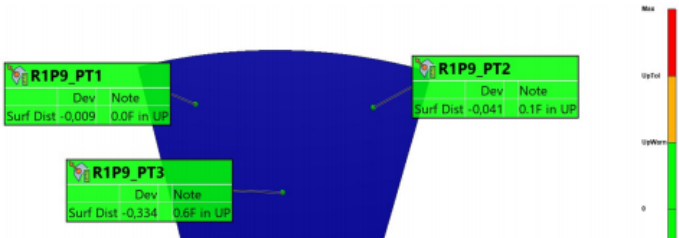
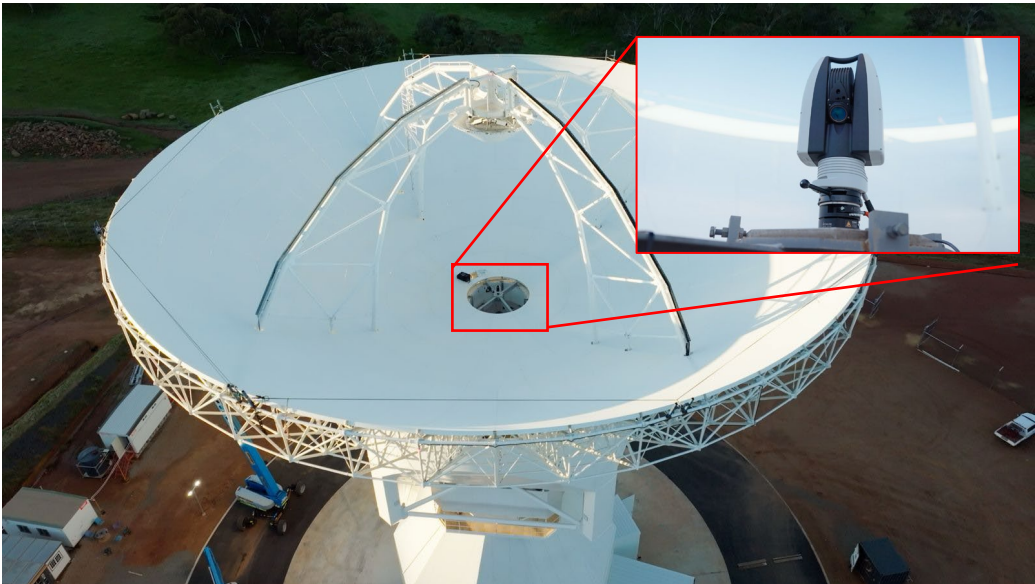
- **Purpose:** Test continued availability of system in automated applications
- **Setup:**
 - 2 objects (2m & 10m)
 - 4 alignment features (spheres, reflectors)
 - 4 measurement features (slots, holes)
 - Cycle time 3 min 40 sec
- **Goal:** Log any exception that could result in an interruption of the automated process
- **Result:** Process ran for over 200 hours repeatedly without any interruption, measurement result analysis currently in progress





ATS800 in other research areas





ITER



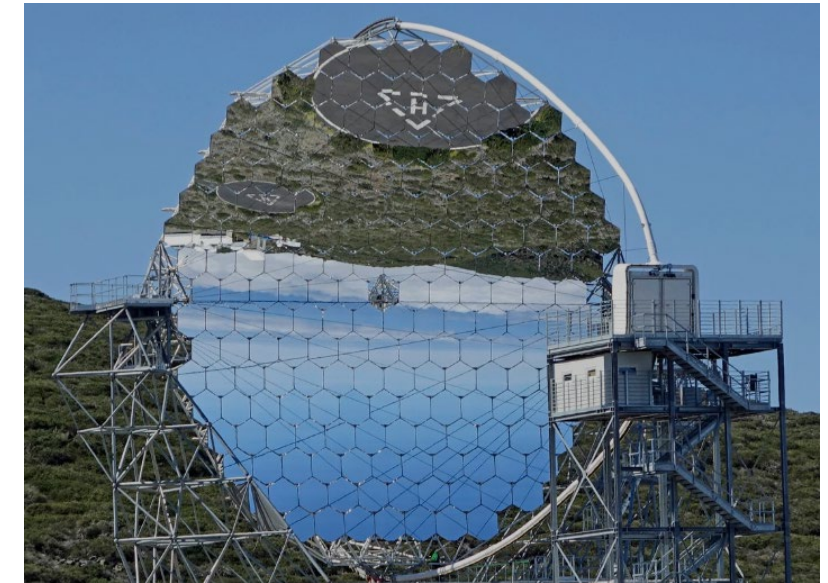
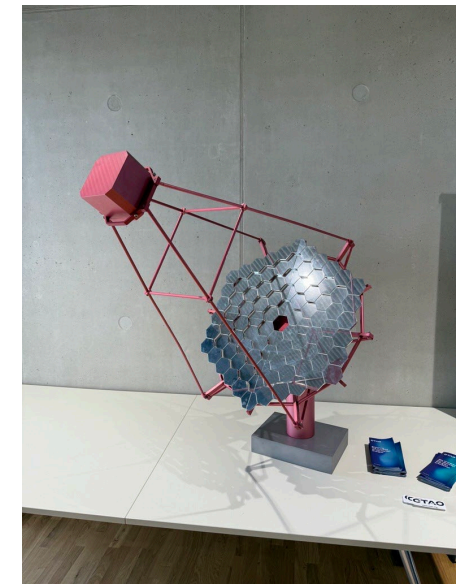
- **AOI** , measurements performed at high angles of incidence. Accurate results thanks to TruePoint
- Portability (size and weight)
- Vertical Angle coverage
- Accuracy
- Reliability, trust in Hexagon Trackers





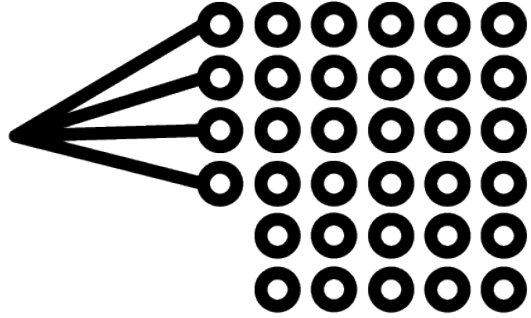
- Institute: DESY Zeuthen
- Industry segment: Antenna production
- Application description:
DESY Zeuthen is part of DESY, producing CTAO antenna for space observation
- Key Points:
High accuracy scans on mirrors possible
Low weight and price regarding the competition
Outdoor usage

<https://www.ctao.org/de/emission-to-discovery/telescopes/>



What's coming next?

Noise Reduction



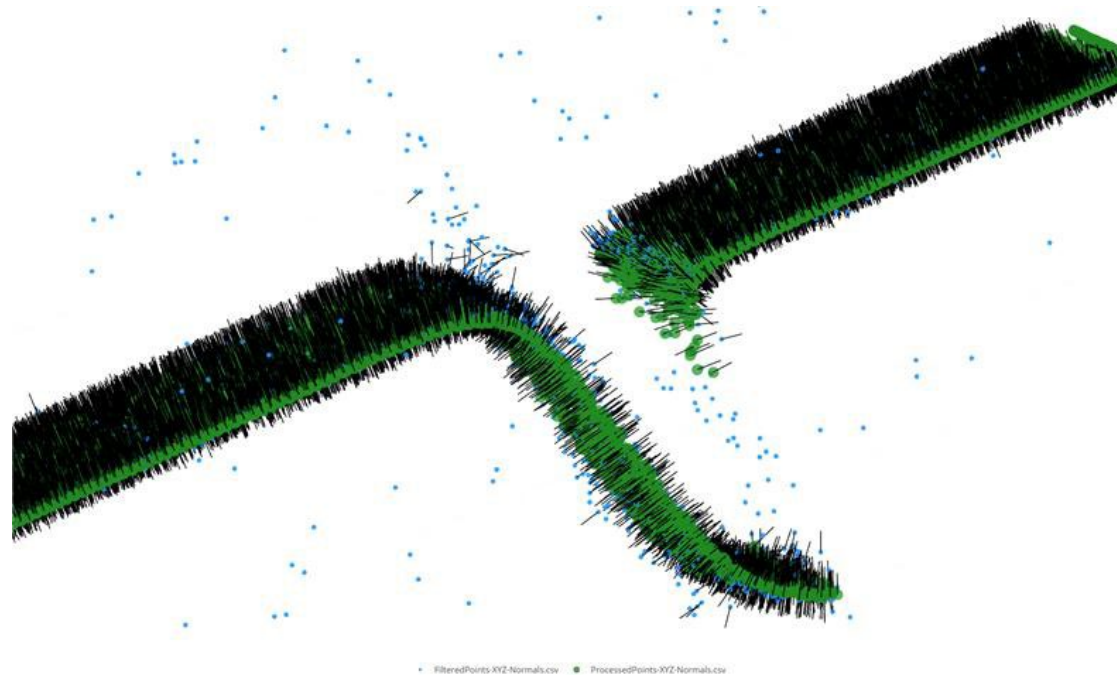
Speed Improvements



New noise elimination algorithm

Coming end of Q4 2026

- New Algorithm is a combination of signal processing and neighbouring point information
- Based on normal vector calculation → outliers detected and removed
- Filtering is done by Hexagon, all 3rd Party SW will have the same (SA, Inspire, Metrolog , PolyWorks)

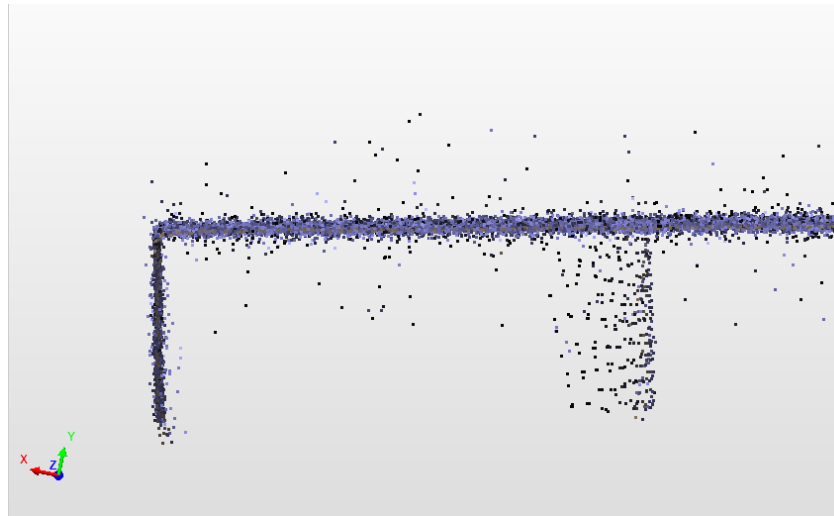


New Noise Elimination Algorithm

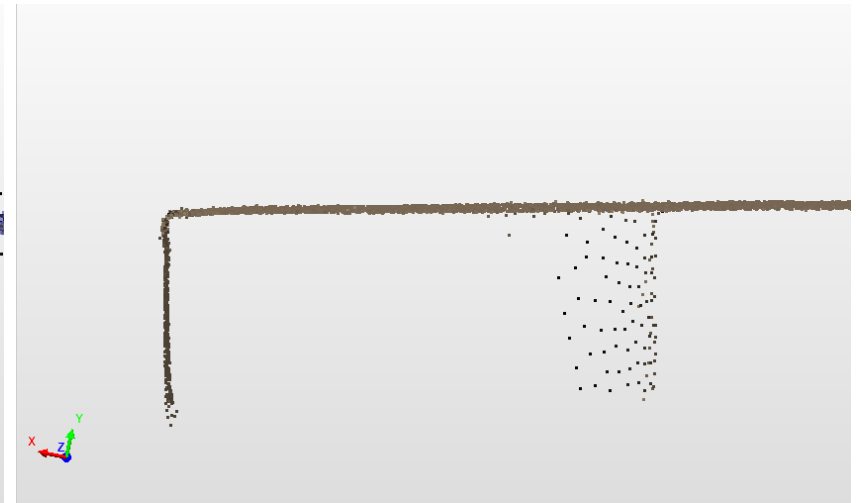
Green Primer



Current state

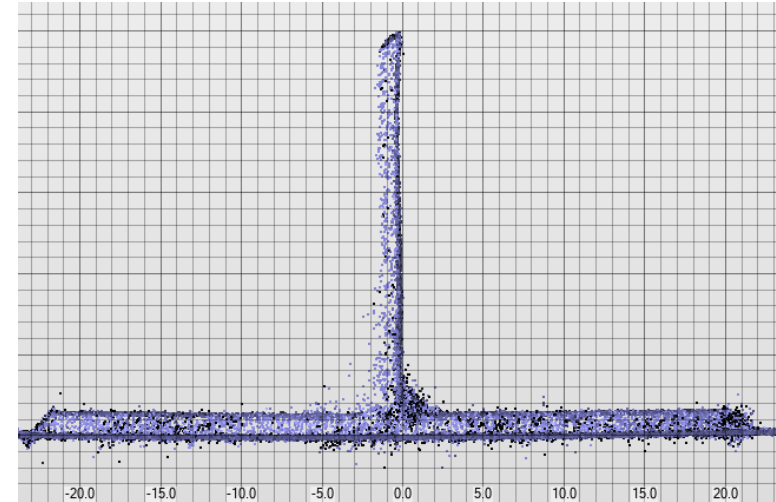
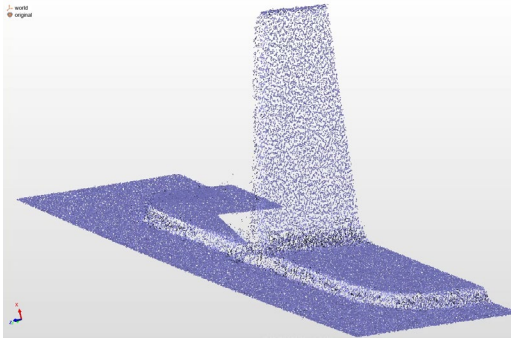


New algorithm!

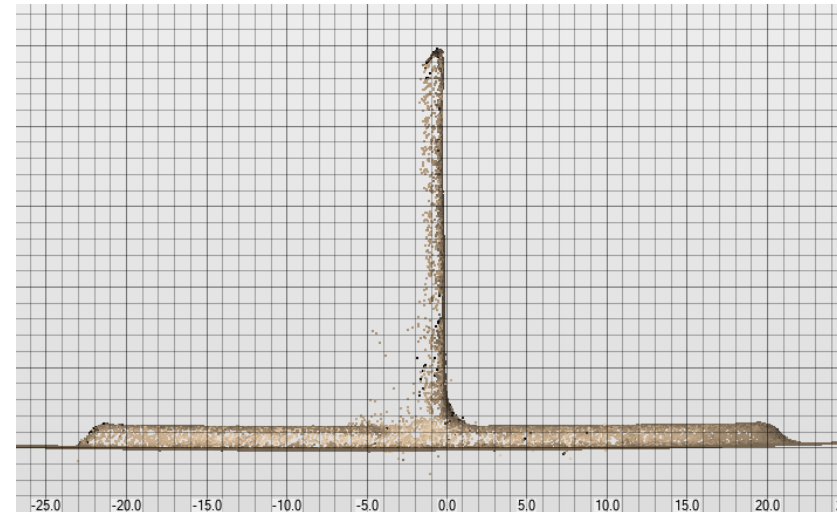


New Noise Elimination Algorithm

Stringer

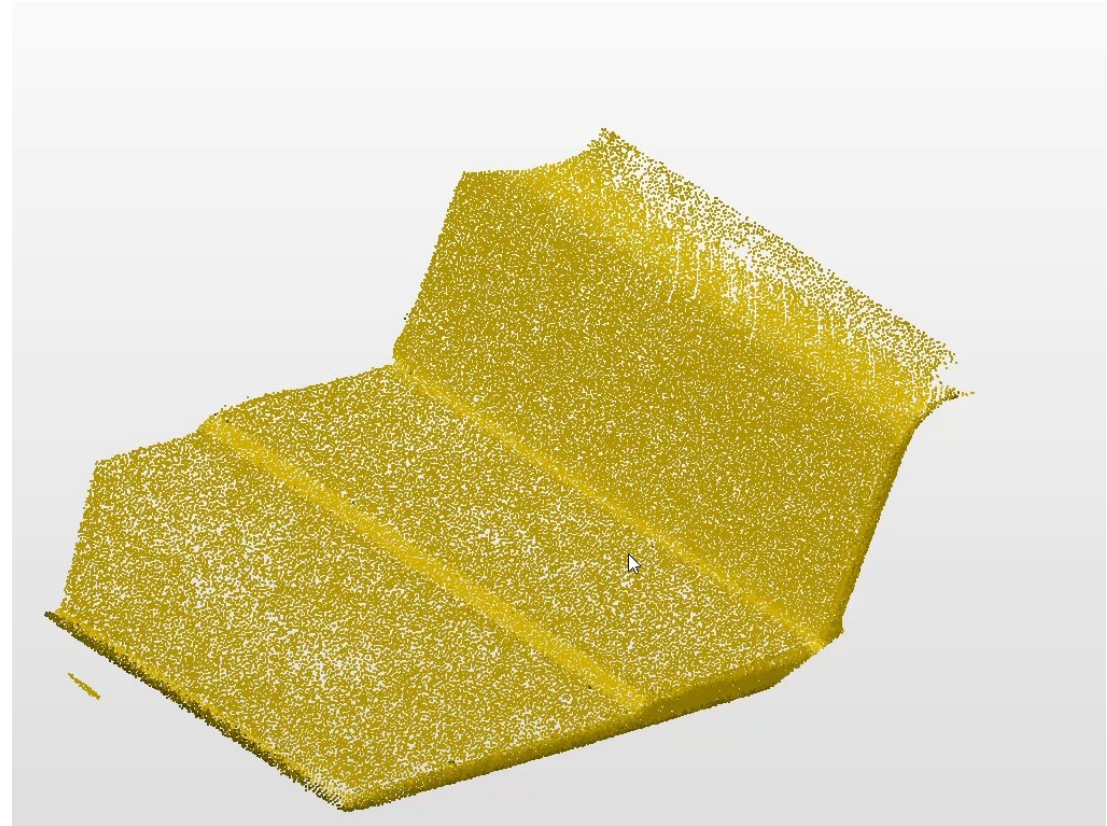


New algorithm!



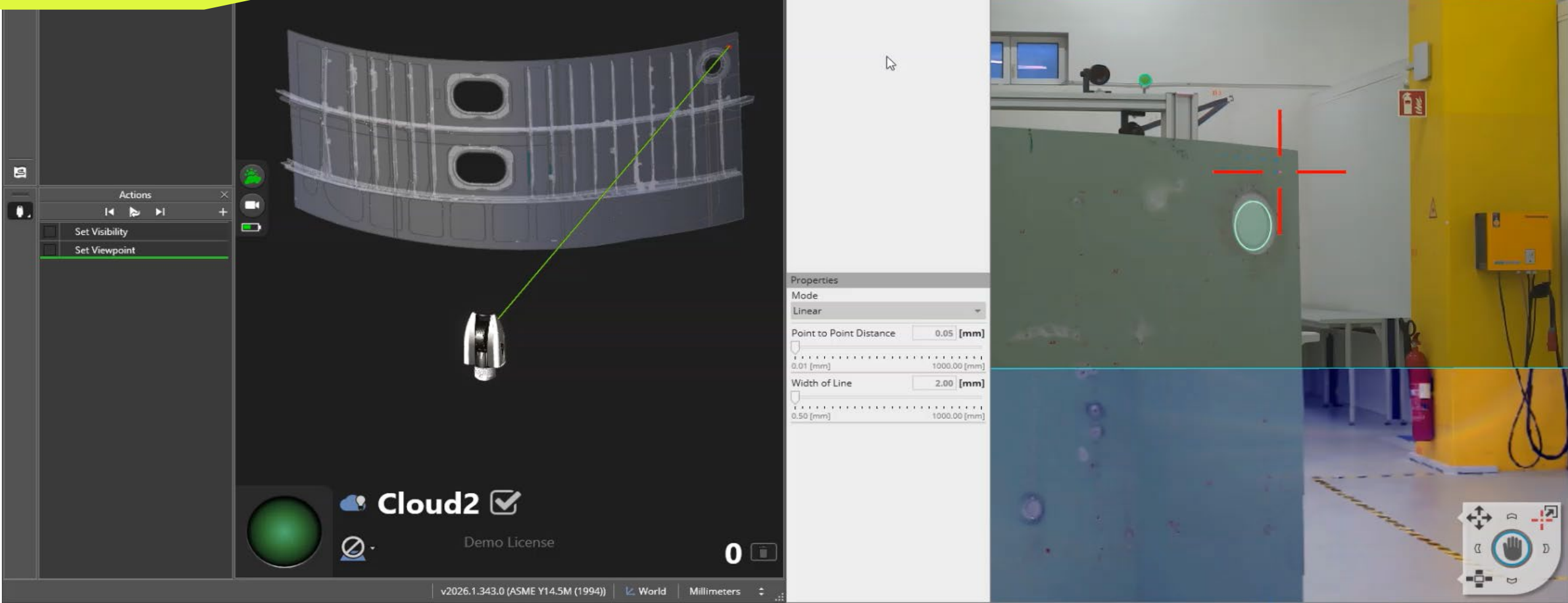
New Noise Elimination Algorithm

- Carbon fiber stringer



Speed improvement

- Up to **3x faster** for surface comparison points.
- 4-6 points/second including movement



Speed improvement

- Up to 1-2 seconds for each hole

Callouts

Alignments

Circle4

Circle5

Circle6

Circle7

Circle8

Circle9

Circle10

Circle11

Actions

Measure Perimeters

Measure Perimeters

Circle11

Criteria	Deviation
Center X	
Center Y	
Center Z	
Diameter	

Circle10

Criteria	Deviation
Center X	
Center Y	
Center Z	
Diameter	

Circle9

Criteria	Deviation
Center X	
Center Y	
Center Z	
Diameter	

Circle4

Criteria	Deviation
Center X	
Center Y	
Center Z	
Diameter	

Circle5

Criteria	Deviation
Center X	
Center Y	
Center Z	
Diameter	

Circle6

Criteria	Deviation
Center X	
Center Y	
Center Z	
Diameter	

Circle7

Criteria	Deviation
Center X	
Center Y	
Center Z	
Diameter	

Circle8

Criteria	Deviation
Center X	
Center Y	
Center Z	
Diameter	

Cloud1

Demo License

0

Overview Camera - ATS800 965288

Tree View

Scene

Panorama

Scans

Areas

Lines

Features

Spheres

Circles

Disks

Patch

Edge Points

Properties

Show cross hair

Show Overview

Overview Size

120 [pixels]

500 [pixels]

Show DRO

Show Zoom Level

Brightness

0 [%]

100 [%]

H 20.2 °

V 107.9 °

D 4.2 m

[CAD Model] HexMI_DemoBlock_Large.IGS

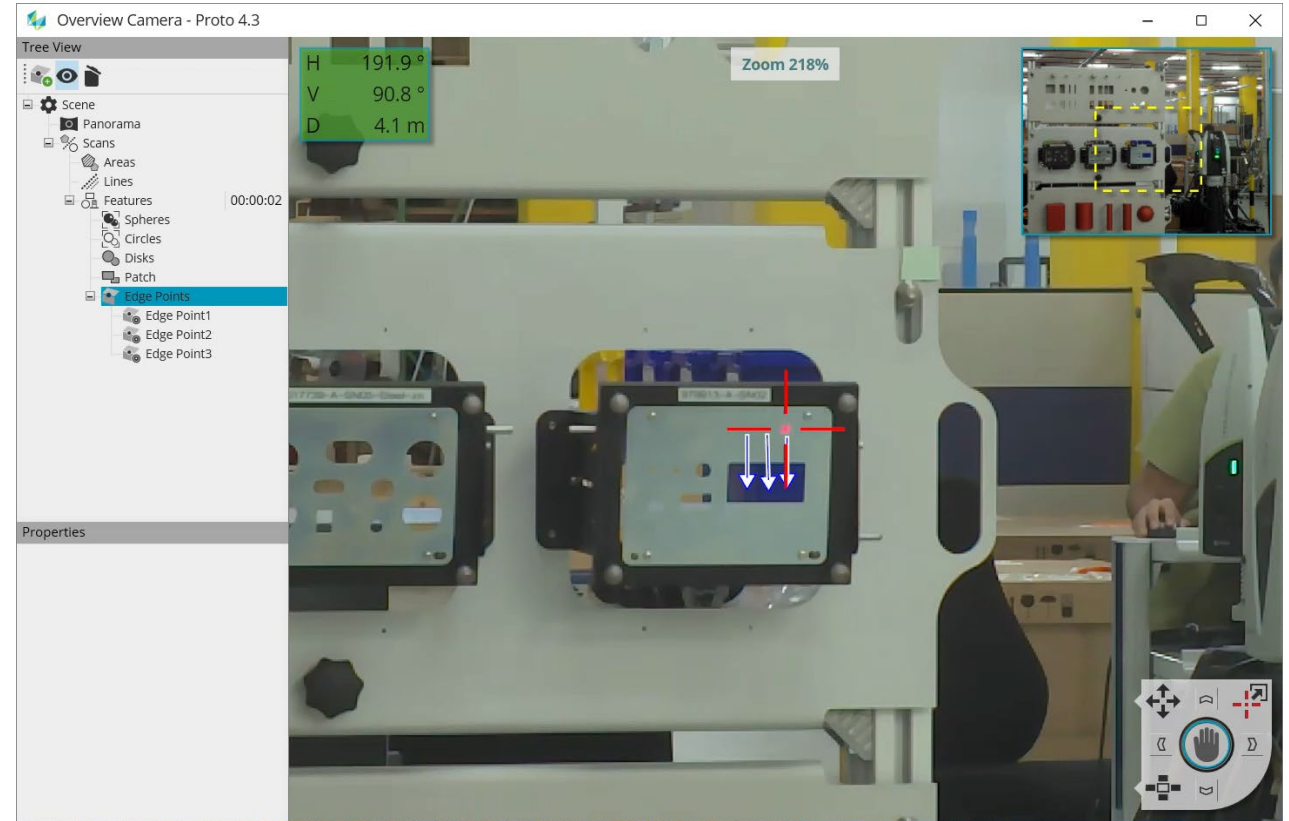
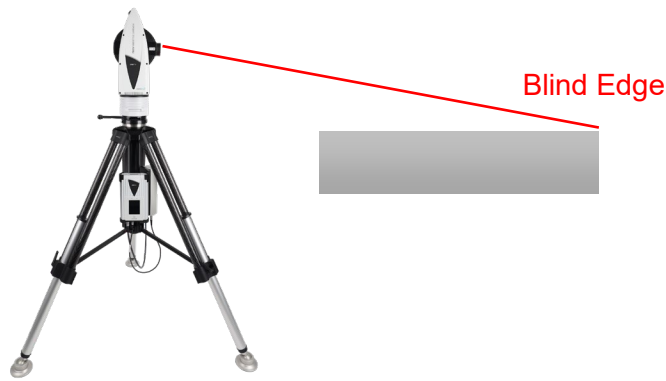
v2026.1.343.0 (ASME Y14.5M (1994))

World

Millimeters

New Feature – Edge Point

- Coming Q4-2026, LMF Version 2.1
- Main use case: Blind Edge
- Typical working distance up to 15 m
- Typical AOI < 60 deg
- Delivers 1 edge point
- Can be added programmatically or via OVC



ATS800 Extending line of sight using mirrors



Technical article

Extending line of sight using mirrors

Looking around the corner with the Leica Absolute Tracker ATS800

Line of sight has always been one of the defining challenges when measuring complex parts or components with direct scanning technologies. No matter how advanced the hardware or software, if the tracker cannot "see" the surface or feature directly, it cannot measure it.

In many real-world applications, for example in aerospace, energy, and research, this quickly becomes apparent. Large assemblies often contain recesses, undercuts, or obstructed geometries that cannot be reached directly by the measurement beam.

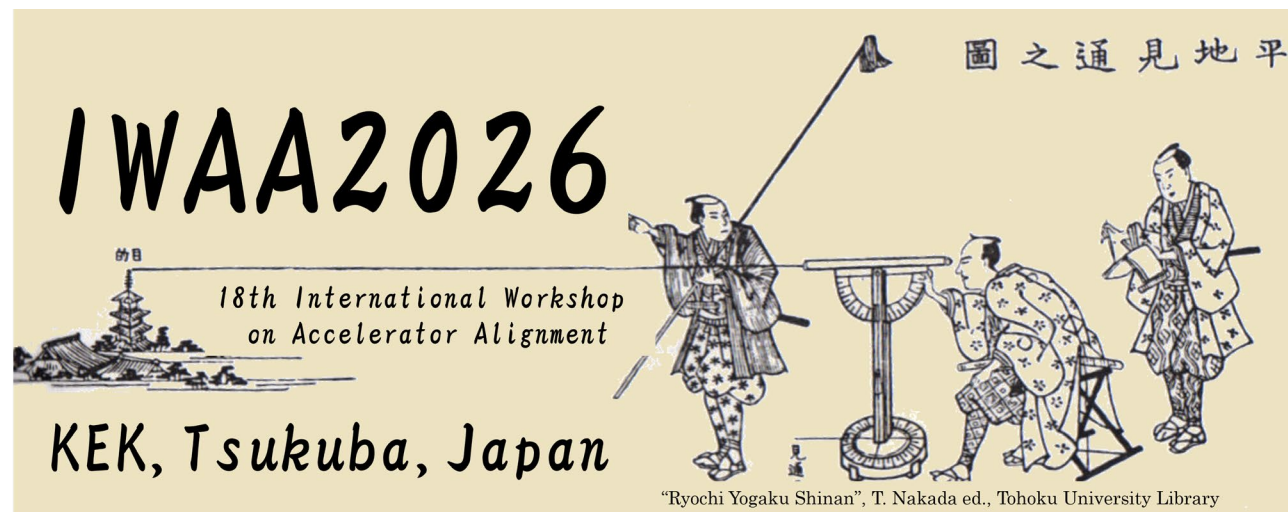


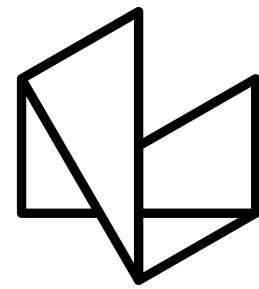
References

Source	Link
Product Website	https://hexagon.com/products/leica-absolute-tracker-ats800
Technical Data Sheet	https://ichs-p-001.sitecorecontenthub.cloud/api/public/content/Leica-Absolute-Tracker-ATS800-data-sheet?v=c476eb5a
White Paper	https://hexagon.com/resources/resource-library/forms/the-new-2in1-solution-from-hexagon-for-direct-scanning-of-fine-details-at-distance
Measurement Over Mirrors	https://blog.manufacturing.hexagon.com/metrology-measurement/laser-trackers/extending-line-of-sight-using-mirrors/

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THANK YOU!





HEXAGON