Nikon Metrology:

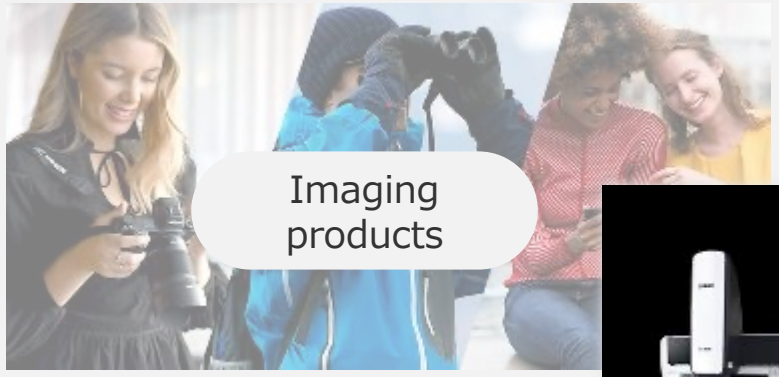
Electric Vehicle & Battery Quality Control with Nikon

Meet the Presenter

Lucy Parsons | APDIS Account Manager Europe

13 years of automotive, aerospace and metrology experience covering measurements and automation. Working with the Laser Radar products across a number of key industries including Automotive, Aerospace, Energy and general manufacturing

Overview of Nikon

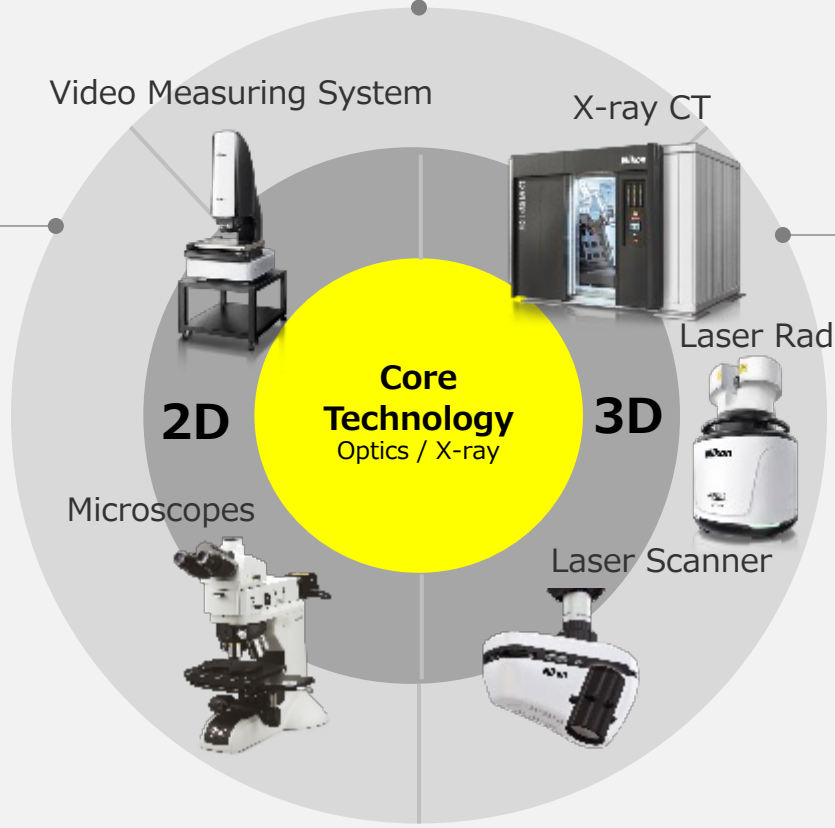


Nikon Industrial Metrology

Innovative measurement solutions for your shop floor

Rethink industrial metrology with Nikon's market leading solutions.

Electronic Components Solution

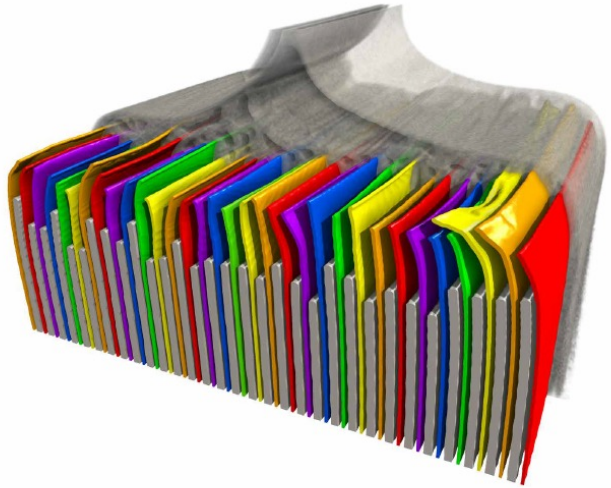


Semiconductor Solution

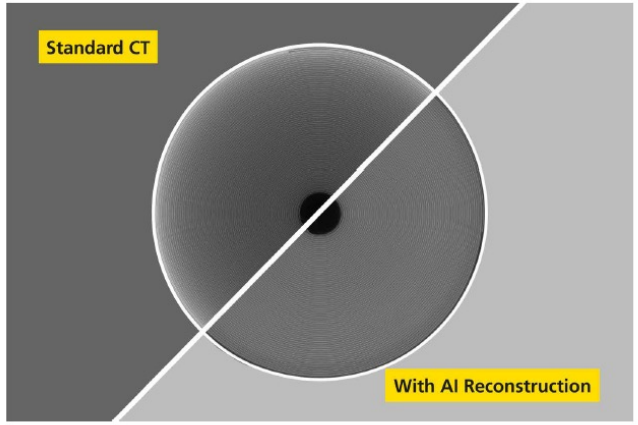
Automotive Solution

X-ray CT for Battery Inspection

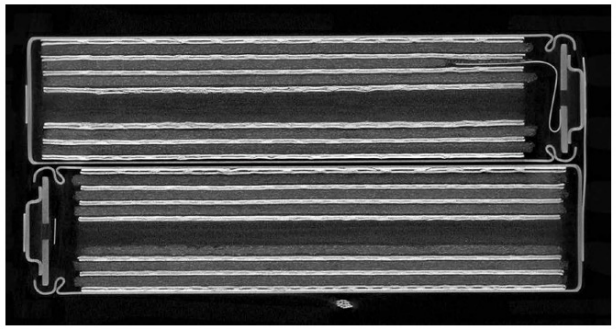
Discover how Nikon Metrology X-ray CT systems provide an advantage
when inspecting batteries parts for automotive, consumer electronics,
Energy Storage Systems and household appliances.



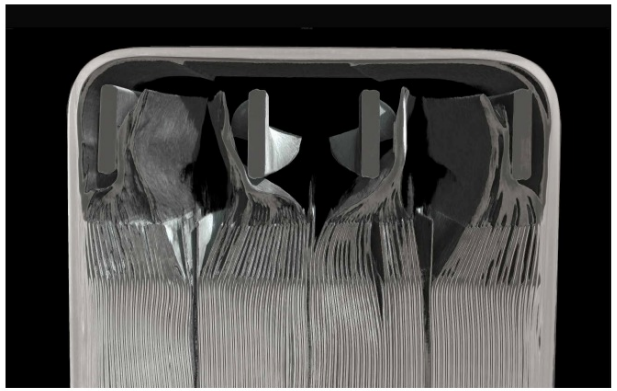
LiB.Overhang analysis



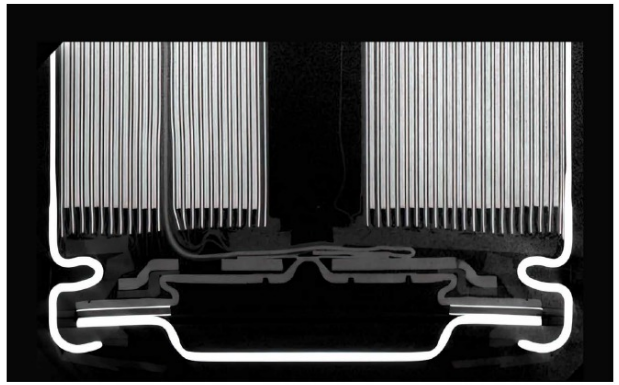
AI Reconstruction



AA cells within electric toothbrush



Prismatic Cell



18650 cell

X-ray CT for Battery Inspection

XT H Series

These systems combine the adaptability needed in the lab with unique features like 225 kV Rotating.Target 2.0, Half.Turn CT acquisition mode and Auto.Filament Control.

VOXLS 30 Series

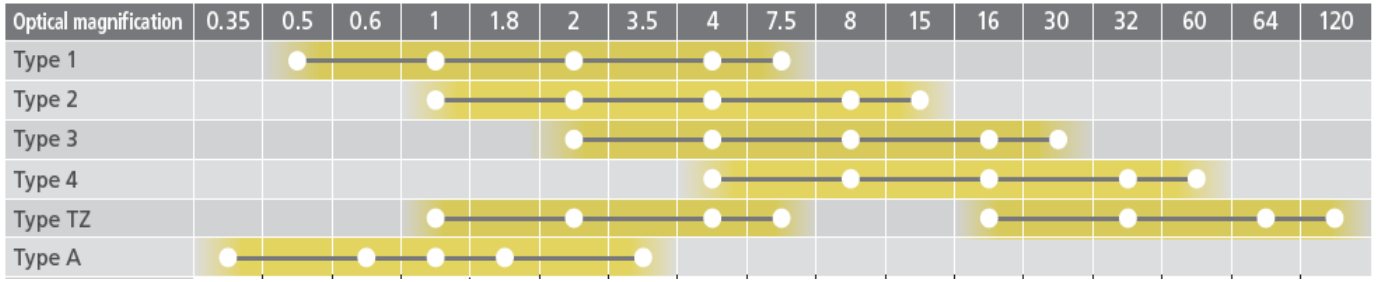
Automation ready, packaged in an efficient footprint and paired with source energies of 225 kV, 320 kV or 450 kV. The VOXLS 30 Series can inspect individual cells up to fully assembled battery packs.

NEXIV video measurement

- High precision Video Measurement system
- Automated and fast measurement of 2D structures
- Flexible illumination suitable for all surfaces
- 5 stage optical zoom
- Built-In TTL Laser for fast height measurements

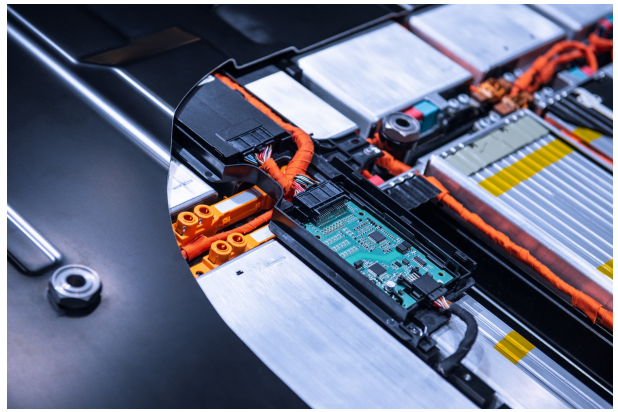
NEXIV VMZ-S series

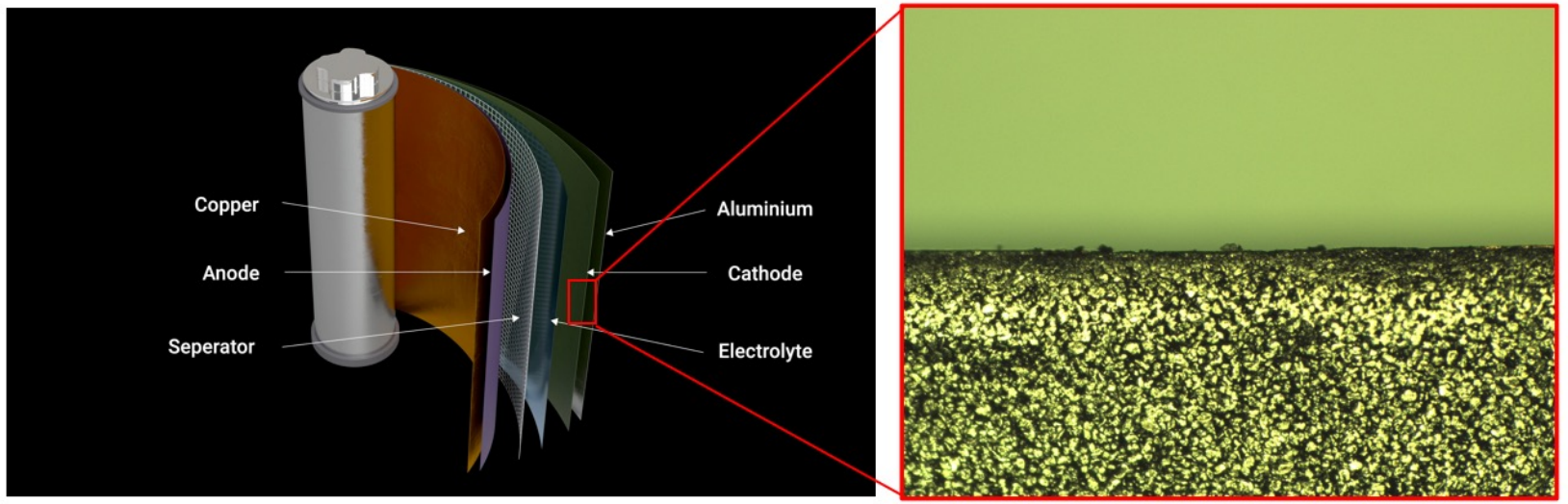
Model	Stage Stroke(X,Y,Z)
VMZ-S3020	300x200x200mm
VMZ-S4540	450x400x200mm
VMZ-S6555	650x550x200mm



Measurements performed on NEXIV

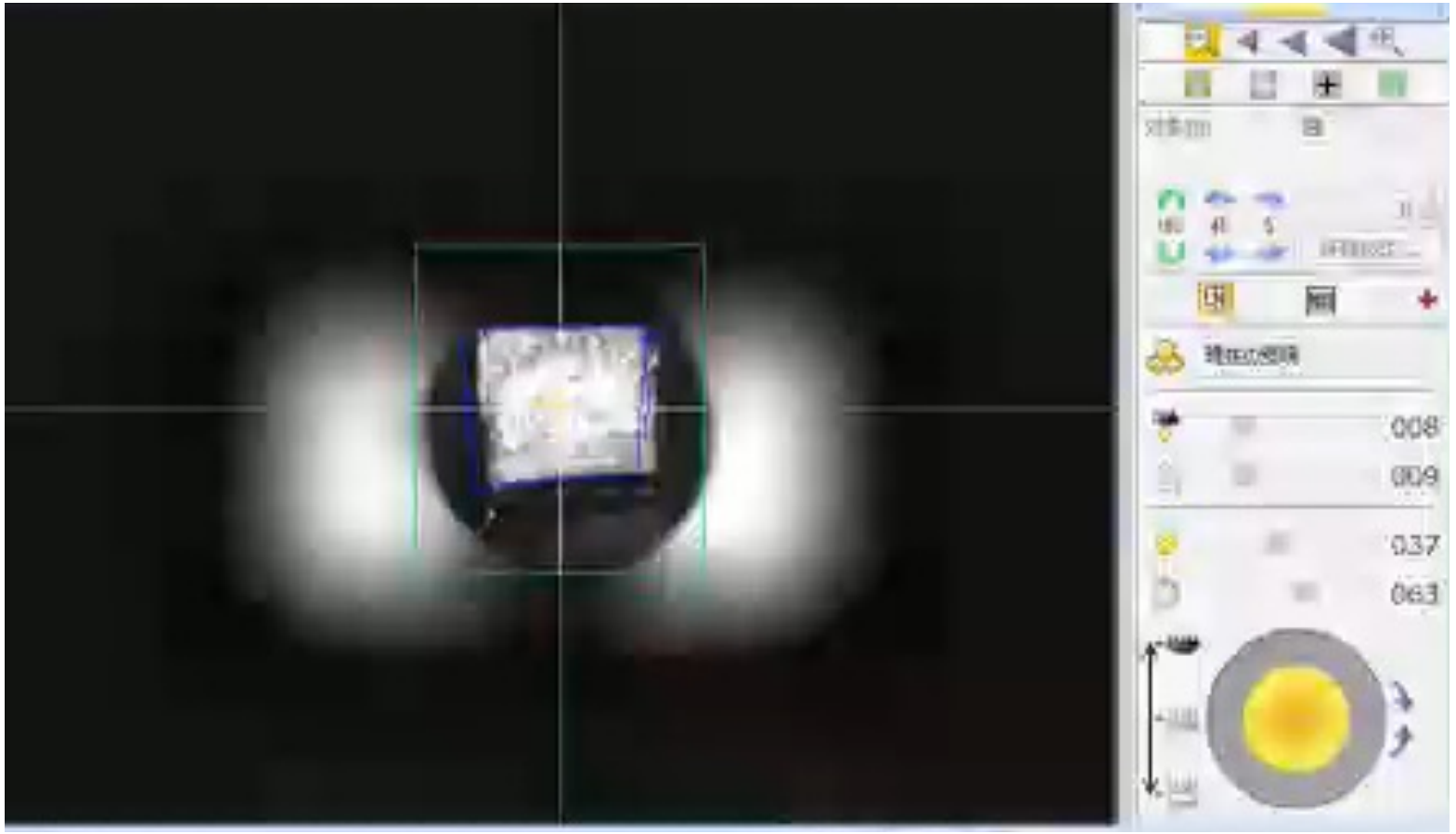
- Dimensional measurements on anode and cathode foils
  or complete battery trays
- Automatic measurement on connectors and pins
- Automatic comparison to CAD drawings
- Automatic measurement of burrs on foils edges
- Automatic measurement on cutting tools





Measurement example

Automatic measurement is possible by correcting the deviation caused by the process.



EV Manufacturing Challenges

EV vs ICE Vehicles

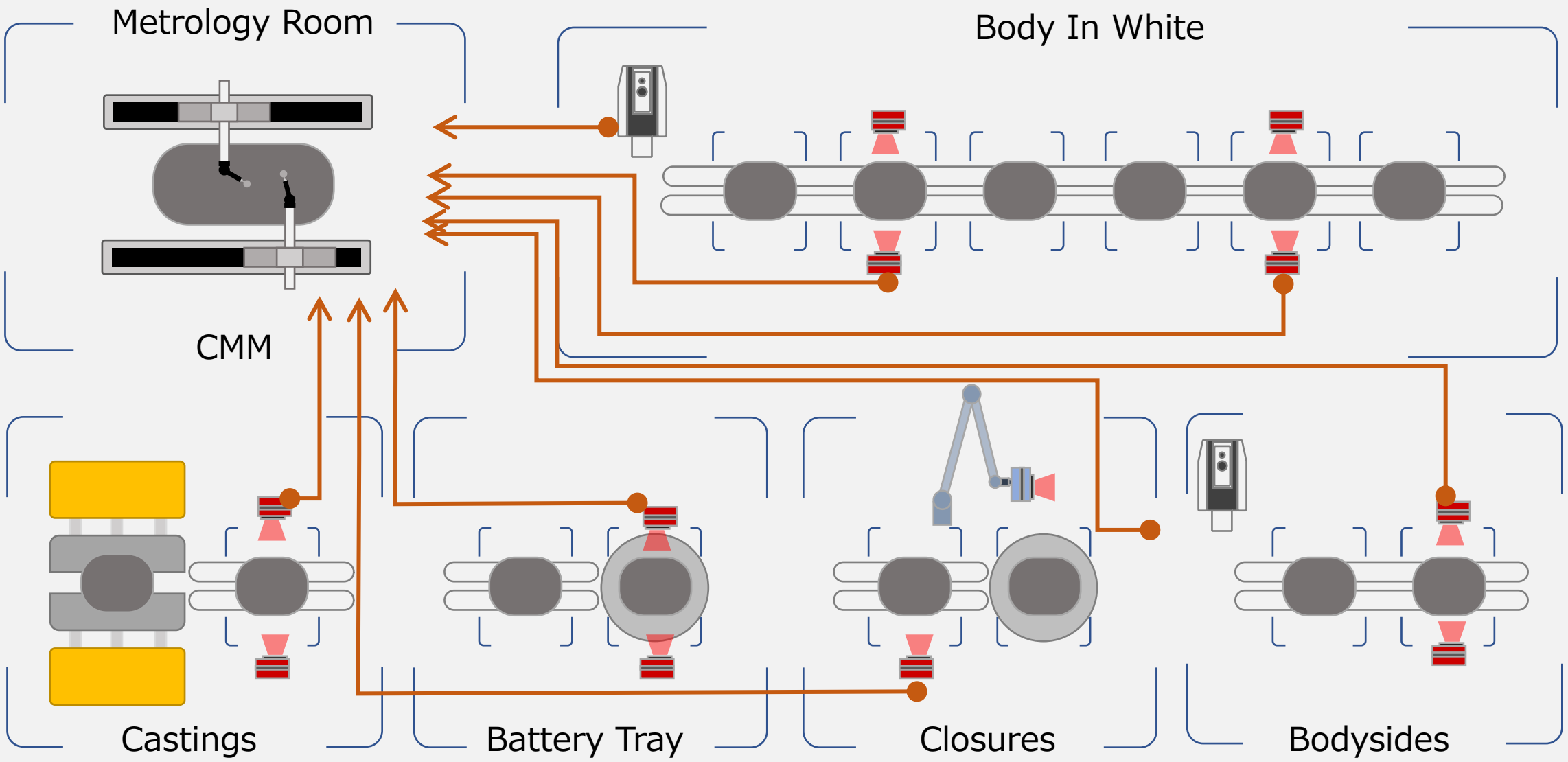
ICE Vehicle Manufacturing

- Similar outside – 4 wheels, 2-4 doors, hood, boot
- Internal concepts different
- Lots of batteries, smaller motor, transmission differences

Fewer Parts – Less room for error

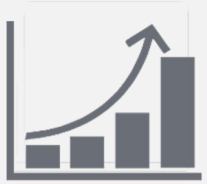
- Larger individual components reduces number of parts
- Complex structures that need to be right first time
- Cannot use fixturing to ‘force’ parts into position
- Battery trays have tight tolerances due to battery requirements
- Still need to attach other parts and components – holes, threads, studs still present

The Traditional Bodyshop



The Need to Change

- More and better information
- Closer quality and process control
- Traceable measurements
- Flexible deployment
- Maintain high accuracy / repeatability



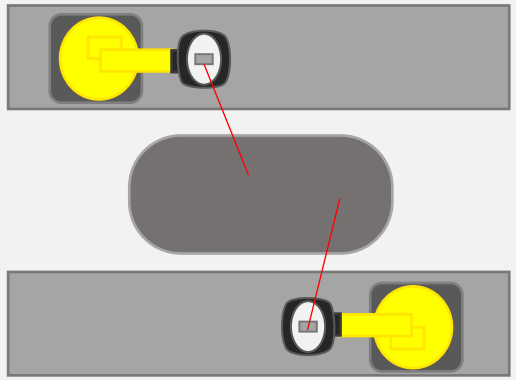
Laser Radar

Not your average setup

Intro: APDIS Laser Radar

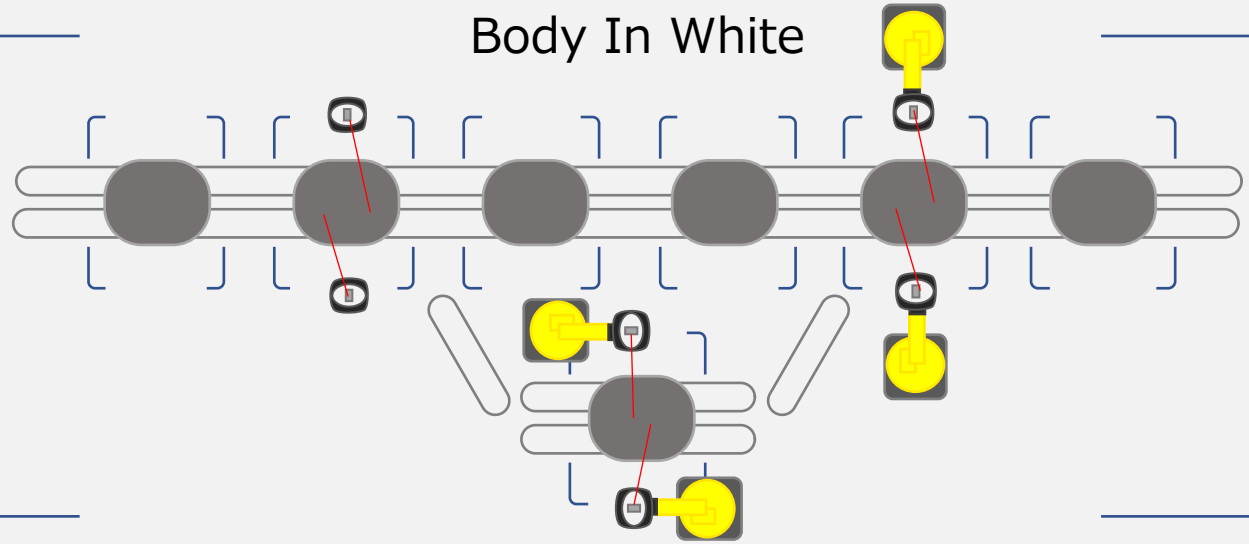
A New Approach

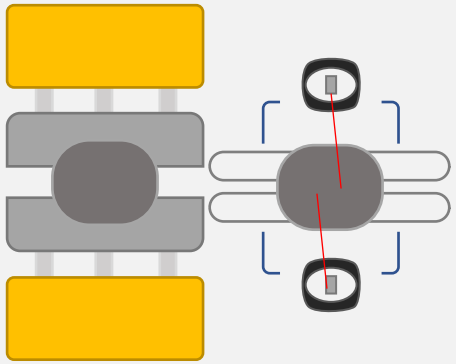
Metrology Room



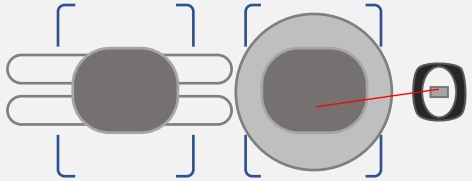
CMM

Body In White

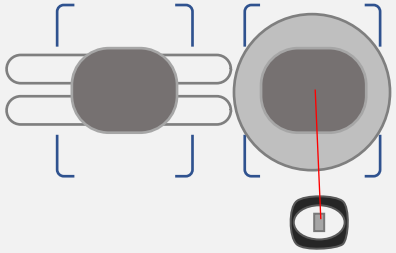




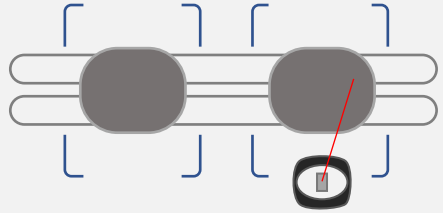
Castings



Battery Tray



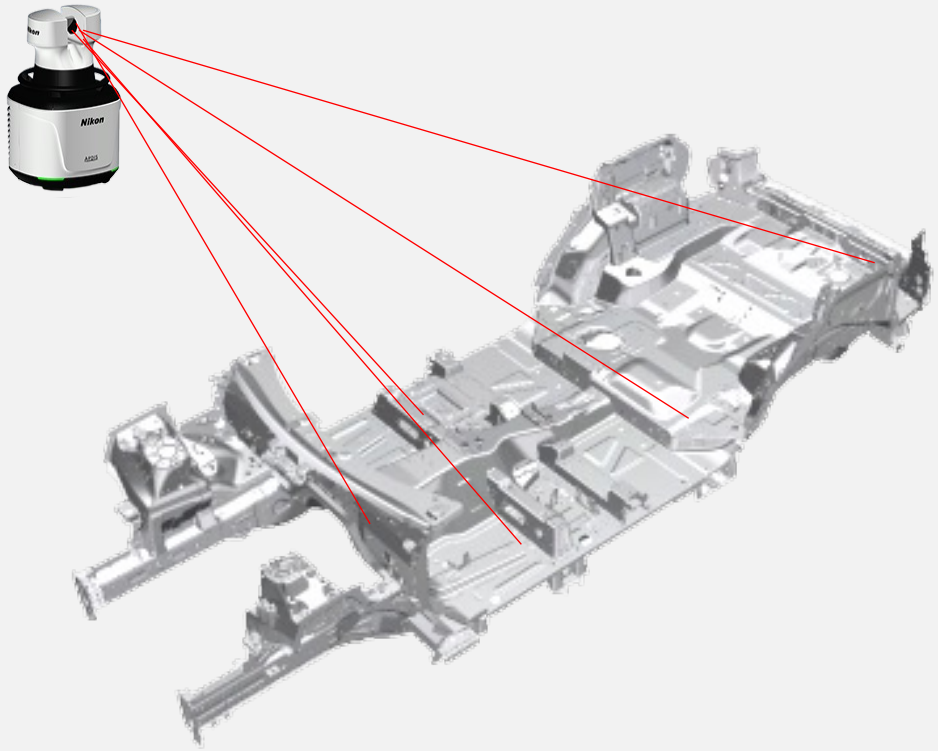
Closures

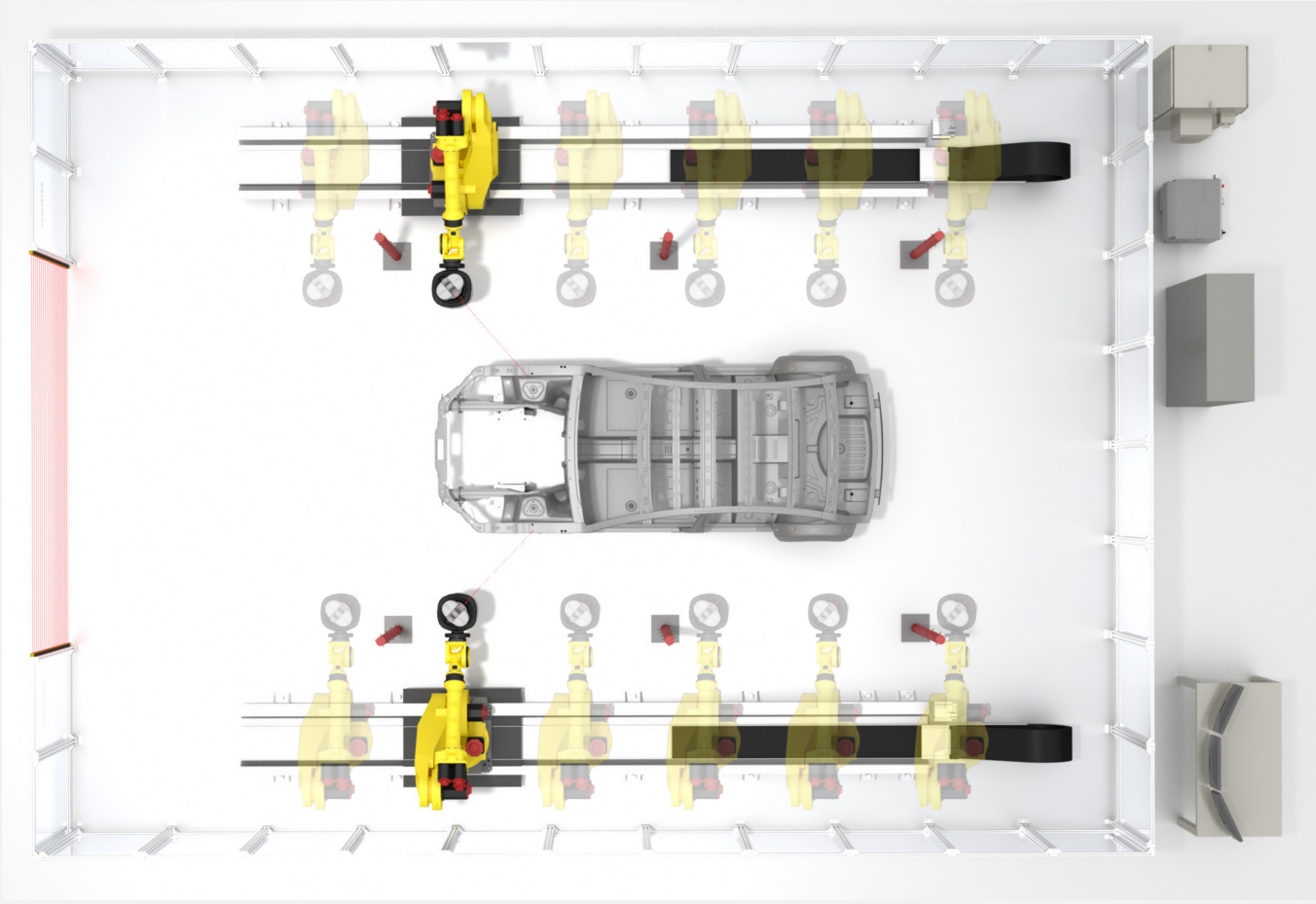


Bodysides

Minimal moves, safe distance

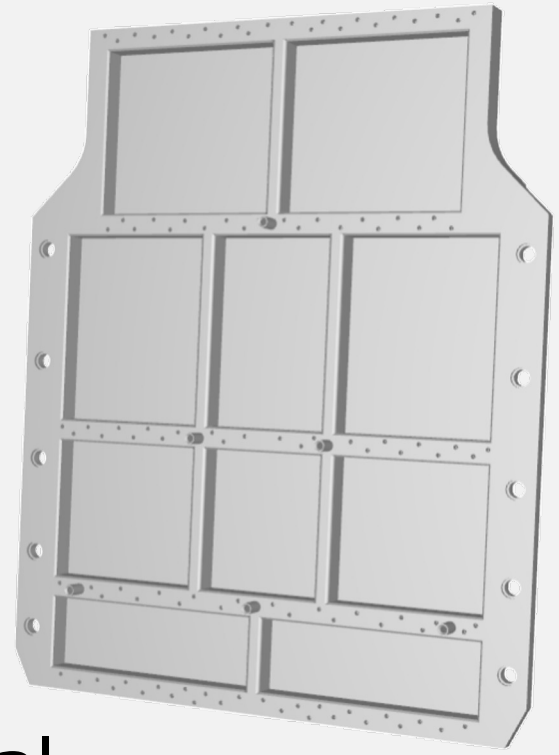
- Simple robot programs
- Large standoff
- Simple modifications

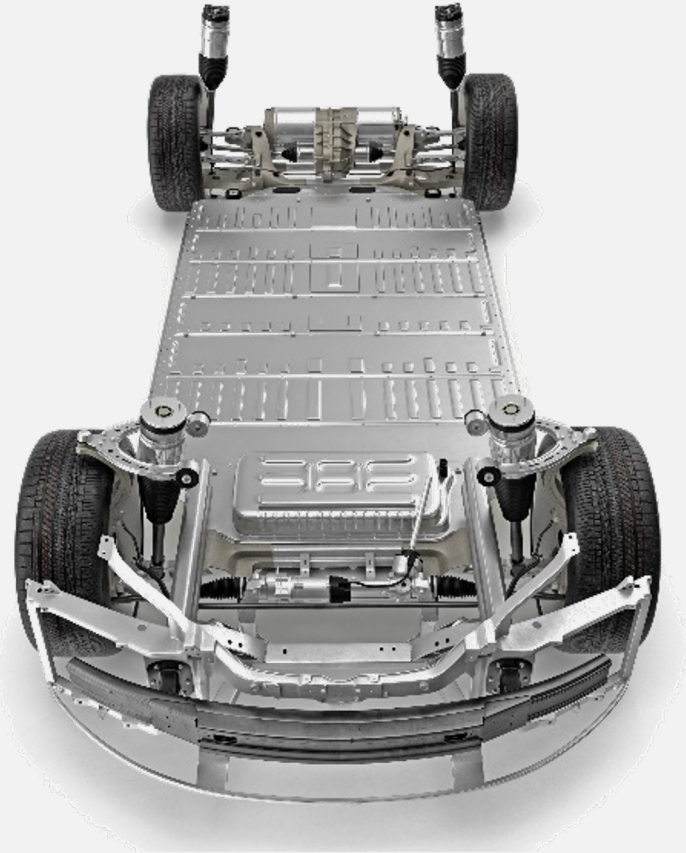




Battery Trays

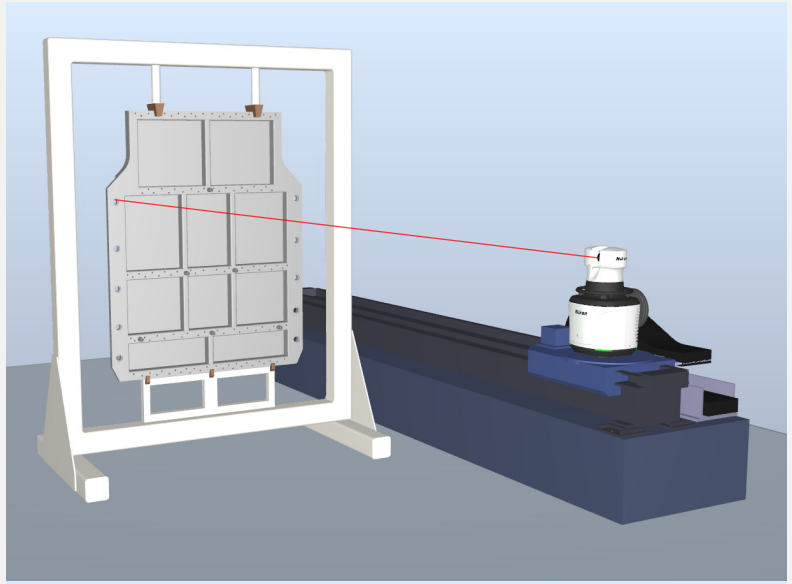
- Critical component
- Can be structural
- Accuracy essential
- Range of shapes and sizes

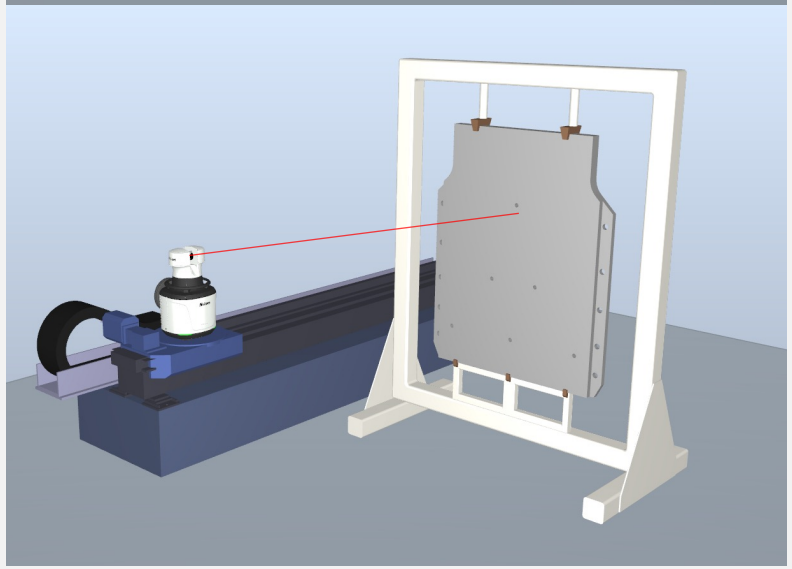




- 100% inspection a goal

Options for Inline



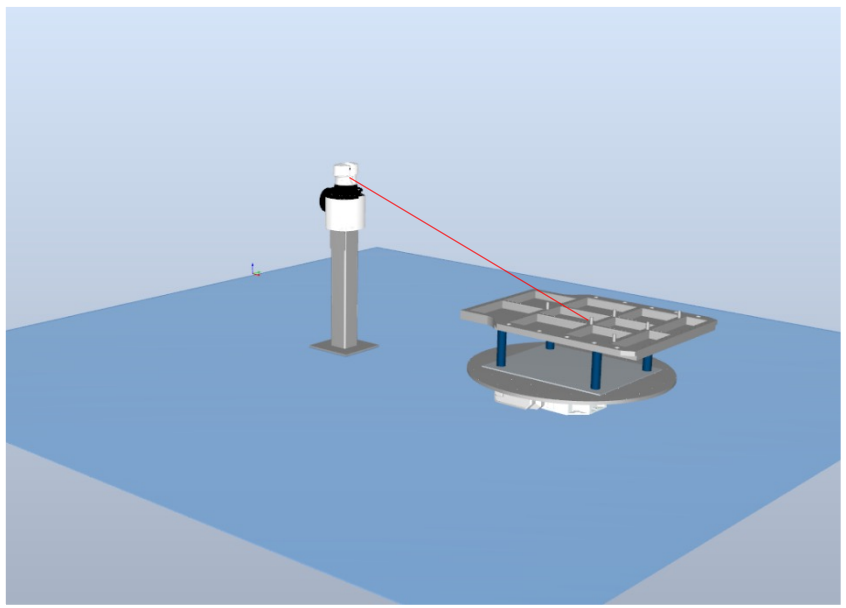


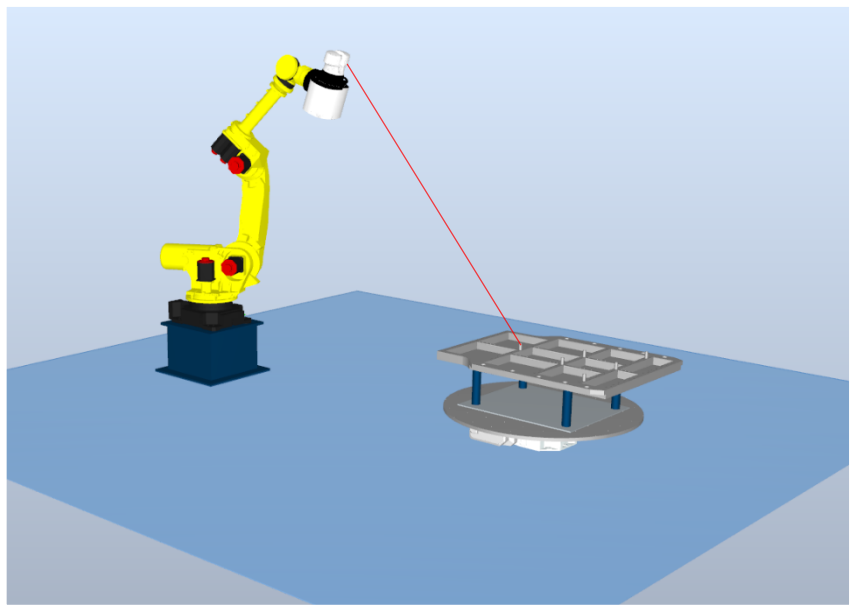
Laser Radar

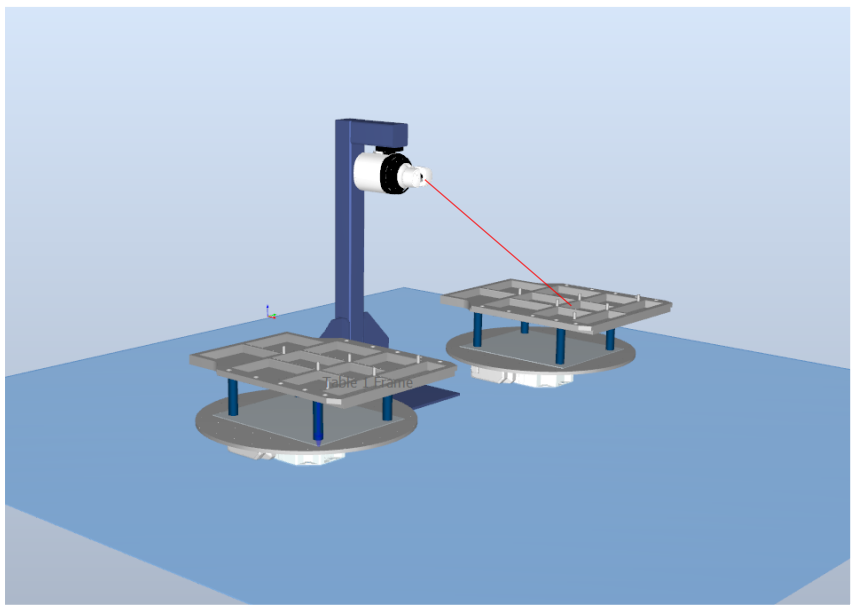
- ✓ Fast
- ✓ Environment independent
- ✓ High accuracy and repeatability
- ✓ 100% of features (no adapters)
- ✓ Easy setup

Battery trays

- Wide FoV and long range allows measurement of battery trays in-line or off line
- Many times faster than CMM
- Flexible deployment from static, turntable or robot installations







Benefits

- Measurement Speed up to 10 times faster than CMM
- High accuracy and repeatability
- Measure without adapters/coatings
- Up to 100% feature coverage
- CMM quality measurements in-line
- Flexible deployment
- Safe standoff
- Same measurement method, everywhere
- Trustable data

Already Here

- Over 200 installations worldwide
- Measuring BiW, components, battery trays

Thanks a lot for your attention!

Meet us here for the rest of the day……

HALL 2, Stand B37

https://industry.nikon.com

EMAIL US FOR FURTHER INFORMATION