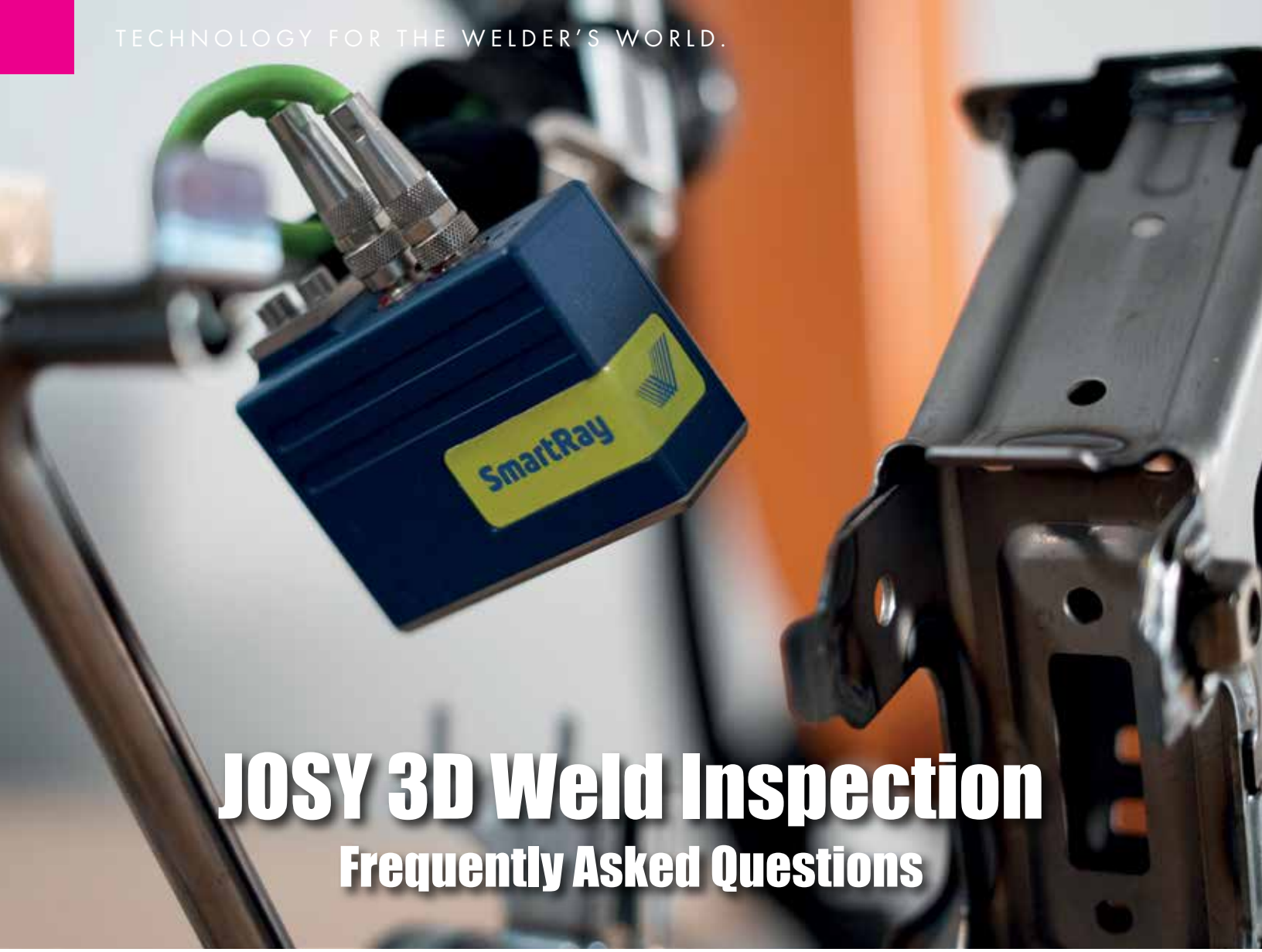

JOSY 3D Weld Inspection

Frequently Asked Questions

Automated, high-speed weld inspection package that increases production speed and efficiency.

SmartRay's fully automated weld inspection system JOSY, combines hardware and software packages using ultra-precise 3D sensors with an advanced algorithmic process to quickly and reliably inspect weld dimensions and detect weld defects to micron levels of detail.

ABICOR BINZEL® ROBOTIC SYSTEMS

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JOSY 3D Weld Inspection
FAQ

What is JOSY?

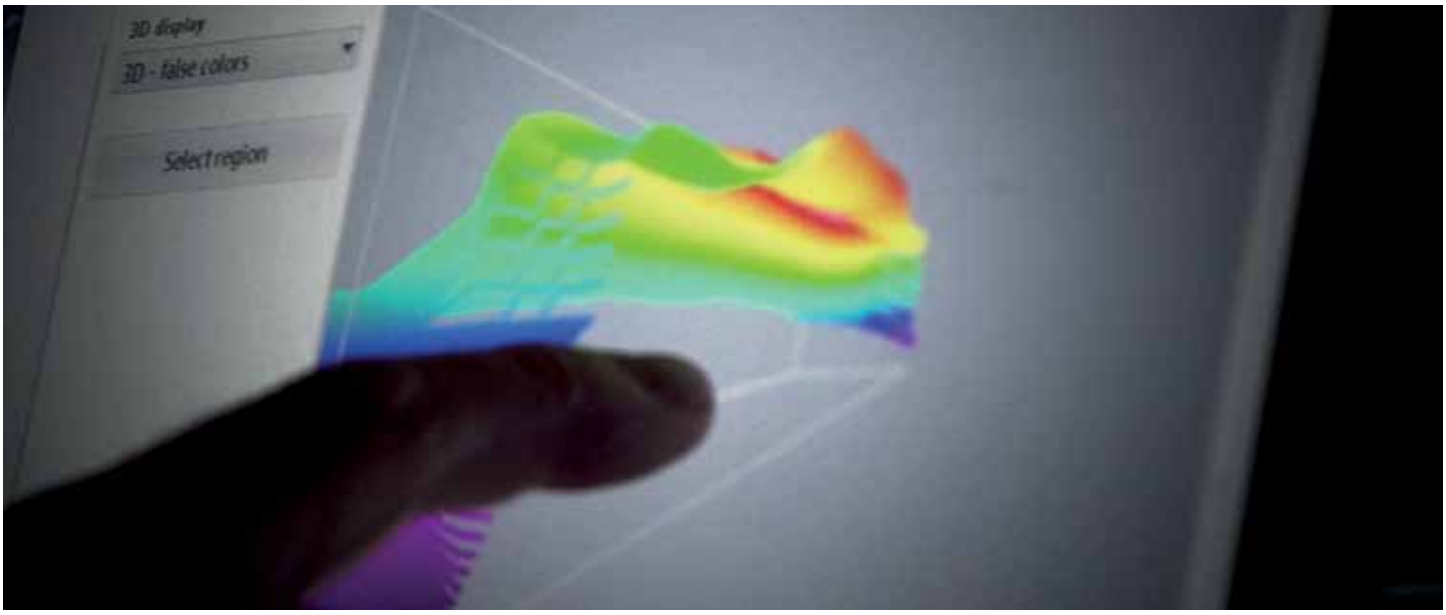
JOSY is a compact, turnkey weld inspection system that uses laser triangulation to scan finished welds, and analyze weld physical characteristics and/or defects to determine whether the welds meet customer specific criteria.

Who is JOSY for?

JOSY is designed for Manufacturing and Quality Managers who wish to dramatically reduce or eliminate inconsistent human weld inspection and incidence of third-party inspection.

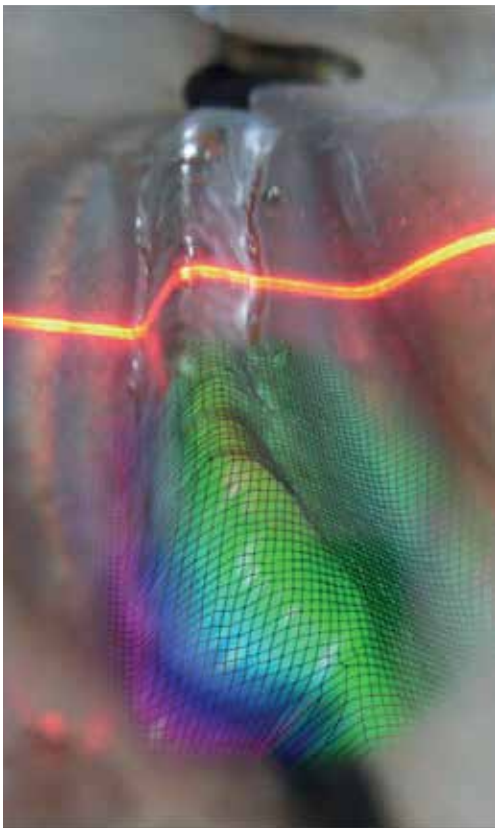
What are the benefits of JOSY?

- Free up time
- Avoid a costly recall
- Reduce third-party inspection
- Mitigate liability and product recall risks
- Comply with updated customer quality standards
- Reduce frequency of weld verification (cut & etch)
- Retain data to provide customer with proof of inspection
- Provide consistent, repeatable weld quality inspection results
- Improve production speed without compromising product quality
- Reduce labor and rework costs by identifying defects more quickly and easily



JOSY 3D Weld Inspection
FAQ

How does JOSY work?



The JOSY sensor uses laser triangulation to measure the profile of the weld; the scan then renders a 3D model of the weld. Using software and algorithms, the model is compared to the standard and provides a good or no-good status for each weld.

What type of materials can be scanned?

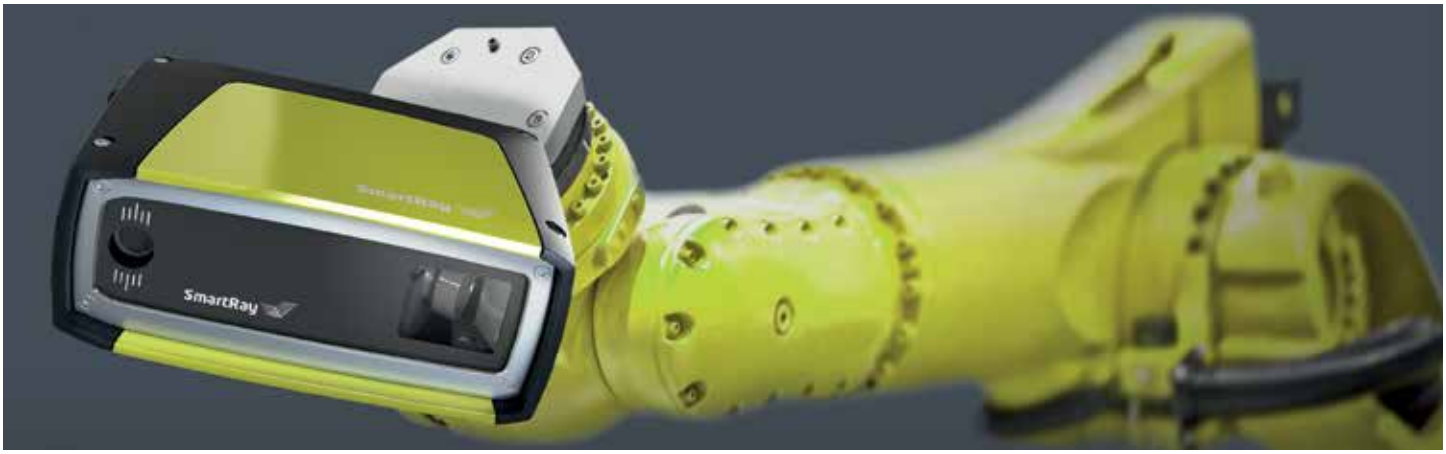
JOSY scans any kind of MIG/MAG, TIG, laser weld or braze on almost any type of material. JOSY scans all types of steel, stainless steel, aluminum, copper.

What travel speeds can be achieved?

JOSY average inspection speed is 100-150mm (4-6") per second. JOSY has the ability to run at speeds as high as 400mm (16") per second with the right sensor and conditions.

What type of application is the "sweet spot" for JOSY?

Automated weld inspection with JOSY is best applied in cases where you have high volume products welded with automation (robotic or semi-automatic). It can be applied to an existing line to add additional value to your process; however is often best applied at the beginning of a new project where it can be best planned for, and incorporated into the design of the assembly line.



What are the robot requirements?

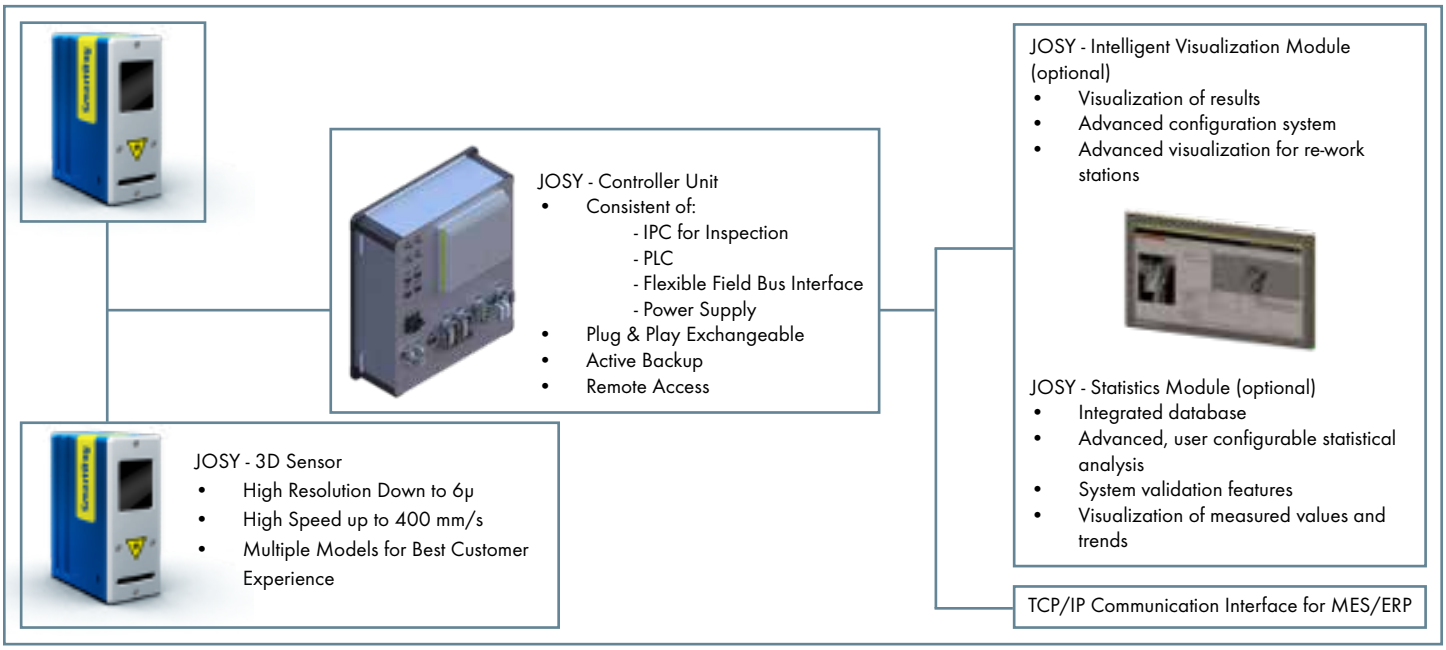
Robot must have software with capability to communicate via EthernetIP or any industrial fieldbus protocol (ProfiNet, ProfiBus, etc.). Robot must be able to output Tool Center Point (TCP) speed.

JOSY 3D Weld Inspection
FAQ

What are the components of a JOSY system?

JOSY consists of a sensor, controller unit and software, optional equipment, installation, set-up/parameterization and training.

System Concept (Two Sensors)



What are typical dimension inspection capabilities?

- Length
- Width
- Throat thickness
- Cross section area
- Weld toe
- Position
- Asymmetry & leg length
- Concavitiy, convexity
- Overlap length

What are typical weld defect inspection capabilities?

- Pores
  - Macro pores
  - Micro pores
  - Porosity (pore nests)
- Holes/burn throughs
- Undercuts
- Incompletely filled groove
- Incomplete welds
- Spatter

JOSY 3D Weld Inspection
FAQ

What are the biggest advantages of JOSY?

- Its small size and fast speed
- It is one of the most compact sensors available
- Fast processing speeds (up to 400 mm/sec)
- Sensor and software all developed in house, so communication and collaboration is best-in-class
- Top level service and support for JOSY solutions in North America provided by ABICOR BINZEL USA

Can JOSY measure items other than welds?

Yes. JOSY has the ability to inspect other objects such as sealant/beads or self-piercing rivets for details such as height, width, or general shape.

What options are available for JOSY?

- Interactive Visualization station for recording of post-inspection repairs
- Management software for reporting of trend-based data in graphical form
- Various levels of training from basic to pro
- On-line service packages for quick maintenance and support

JOSY 3D Weld Inspection
FAQ

What are JOSY's limitations?

JOSY is generally restricted to areas where the sensor can fit. It ideally requires TCP speed data from the robot to optimize measurements related to length, however it can do so assuming the robot's speed is constant from start to end. The sensor should not be installed in close proximity to or on the welding robot unless it is properly guarded against spatter and other harmful debris.

How much does JOSY Cost?

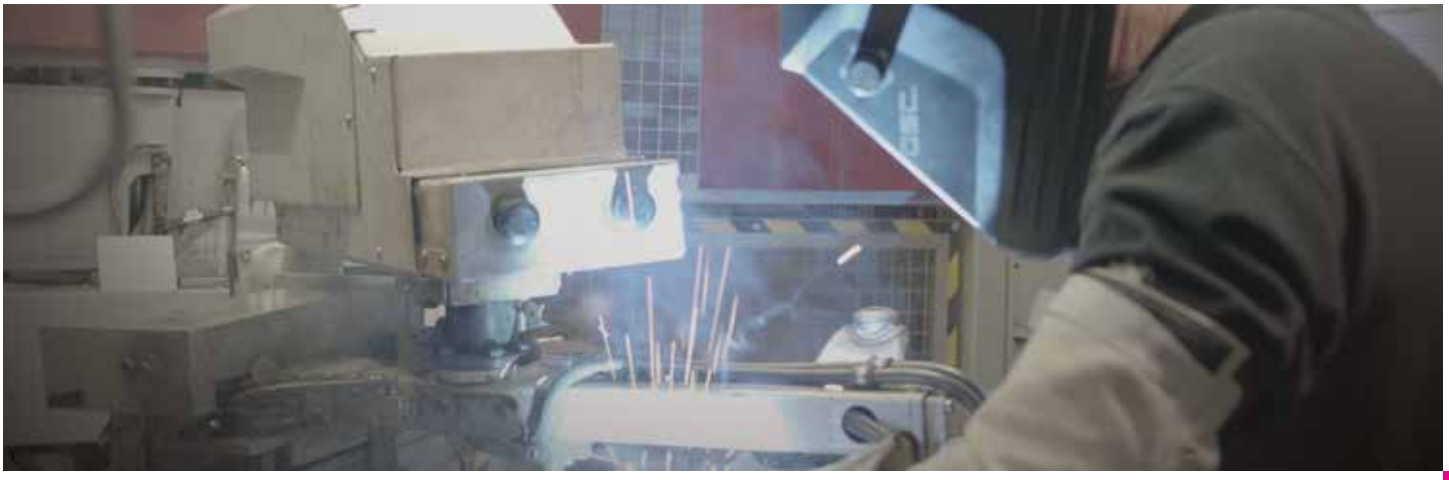
JOSY is a highly customizable solution.

Pricing depends on several factors including:

- Cycle time allowed for inspection
- Quantity of welds
- Type of welding process (laser weld, braze, MIG)
- Number of sensors being used
- Application - Small parts, large parts, acquiring data...

JOSY 3D Weld Inspection
FAQ

JOSY Sensor Overview		ECCO 95.040 (+)	SR 1216 @ 100
1.	What is the housing material?	Aluminum	Aluminum
2.	What is the Laser type? (Freq.)	Laser Diode - 450 nm	Laser Diode - 660 nm
3.	What is the Laser power? (mW)	Max. 1.6 mW	Max 4.56 mW
4.	What is the reference distance?	60mm stand off	100mm stand off
5.	What is the resolution? (in window)	Lateral 18-20µm/Vertical 1.4-1.8µm	Lateral 68-82µm/Vertical 8-12µm
6.	What is the sensor spot length?	Laser line length: 36mm	Laser line length: 36mm
7.	What is the measurement range? (Z-Axis)	16mm	40mm
8.	What is the Field of View? (X-Axis)	36mm	36mm
9.	Does it have replaceable lenses?	No	Cover glass optional
10.	What is the temperature range?	Op: 0 - 40°C Storage: 20 - 70°C	Op: 0 - 40°C Storage: 20 - 70°C
11.	What is the vibration resistance?	As per EN 60-068-2-6: -27, -29, -64	As per EN 60-068-2-6: -27, -29, -64
12.	What is the shock resistance?	As per EN 60-068-2-6: -27, -29, -64	As per EN 60-068-2-6: -27, -29, -64
13.	What is the programming interface?	GB Ethernet: Accessible over JOSY software (parameters, live image, etc.)	100MB Ethernet: Accessible over JOSY software (parameters, live image, etc.)
14.	Does it have traceability?	Yes	Yes
15.	Does it have AI software?	SmartX features (Reflection filtering on sensor)	SmartX features (Reflection filtering on sensor)



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