Axium’s WeldSight-3D (WS-3D) vision system allows a welding robot to adapt to a fuel tank’s irregularities or imprecisions. The objective of the system is to scan a “Region of Interest” (ROI), in this case a weld pad, and to dynamically adjust the position and orientation of the welding tool. This results in the component being both centered and parallel to the weld pad. In addition, the system can detect surface irregularities, hole and weld pad diameter and concentricity, foreign matter detection and potentially “scrap” a shell that has an out-of-tolerance weld pad.

### MAIN FEATURES

- Non-contact 3D scan
- High Resolution
- Not affected by ambient light
- Precision adjustments (position & orientation) for robotic fabrication
- Planning and correction of robot trajectories
- Geometry and dimension control
- Missing or defective matter detection
- Inspection and quality assurance

### BENEFITS

- Improved quality
- Improved cycle time (parallelism reduces welding times)
- Easy installation on existing or new applications
- Better quality for welding operations, reduced scrap
- Accurate positioning on surfaces with variations
- Validation of surfaces dimensions, concentricity and flatness
- Quality validation
Axium’s WeldSight-3D vision system consists of a 3D scanner (camera and laser on a mobile axis) combined to a software with operator interface that communicates with a robot controller (brand and model independent) to correct the position and orientation of the welding tool to adapt to each surface irregularities.

The vision tool can be mounted on a robot as a standalone unit or in combination with another tool like a hot plate welding tool.

**Typical System Precision**

- Linear precision: 0.06mm
- Angular precision: 0.01 degrees

**Flatness Deviation Measurement**

The system measures the maximum deviation points above and below the plane surface of the weld pad.

The 3D vision system software running the algorithms also includes a Graphical User Interface (GUI) that enables an operator to visualize the scanning process and see the results live while the data is being transferred to the robots. It also enables an operator to easily configure the system for different part shapes.