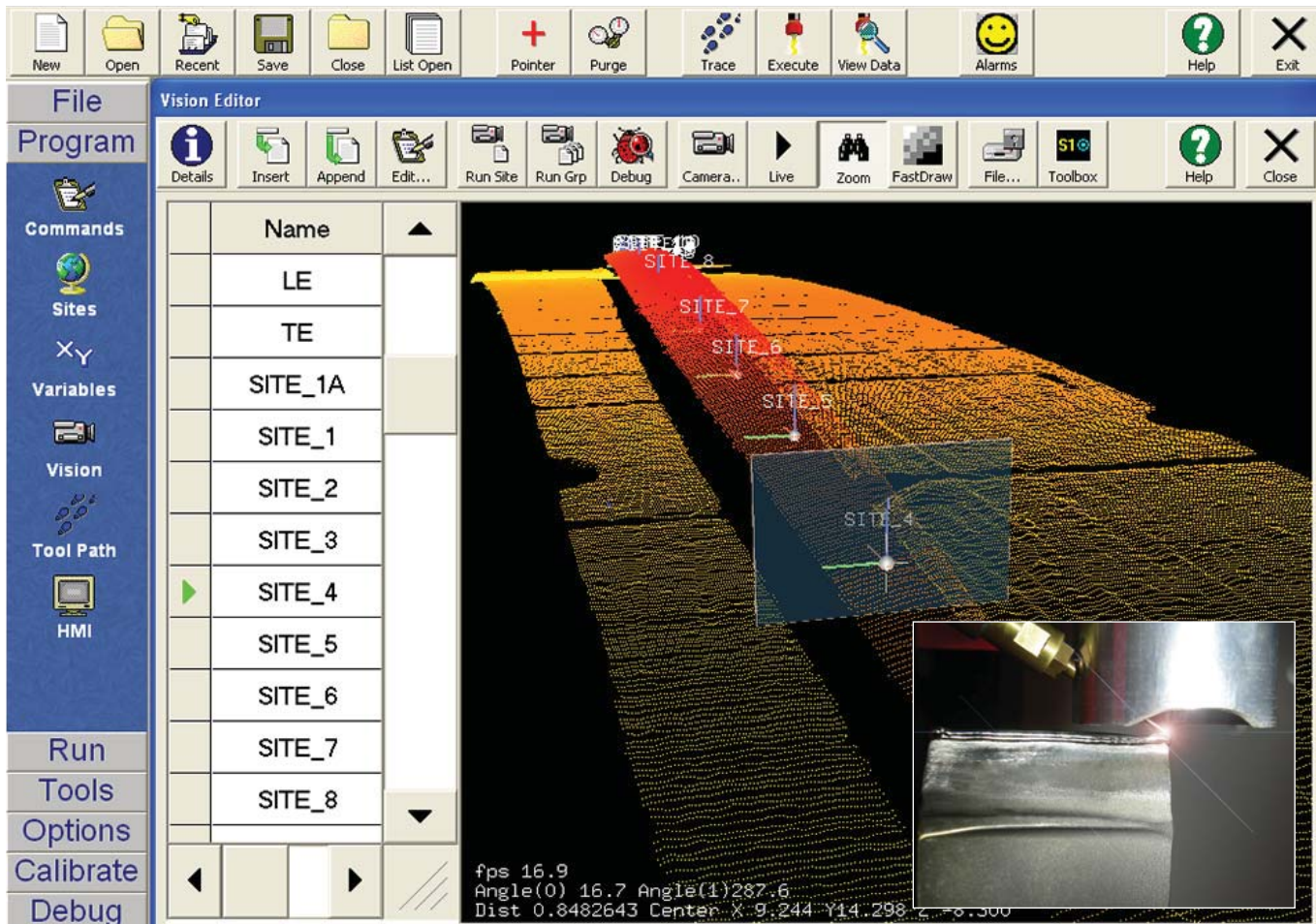


3D LST™ (3D Liburdi Seam Tracker™)

Full Path Generation for Multiple Weld Passes in One Process



3D LST™ (3D Liburdi Seam Tracker™)

In conjunction with Liburdi LAWS (Liburdi Automated Welding Systems), we offer a 3D scanning solution that generates high accuracy weld paths for systems that can be used in any market niche including aerospace components. The 3D LST™ (3D Liburdi Seam Tracker™) allows our systems to track a joint or build up complex geometries or scan from a master component and use a "best fit" algorithm to add material to an existing shape. The 3D LST™ scans the part, constructs a point cloud model and generates a 3D weld path from point cloud data with micron level repeatability.

3D LST™ over traditional methods simplifies the site finding process by eliminating the need to transmit data from certain camera images to establish the X, Y and Z co-ordinates for a specific site. Using the point cloud, X, Y and Z coordinated can be determined from one search algorithm.

The ability to generate a path from a master profile allows automatic calculation the X-Y offsets based on a specific Z height from the prepared weld surface. This significantly simplifies the path generation and weld development for 3D blades.

3D LST™ (3D Liburdi Seam Tracker™)

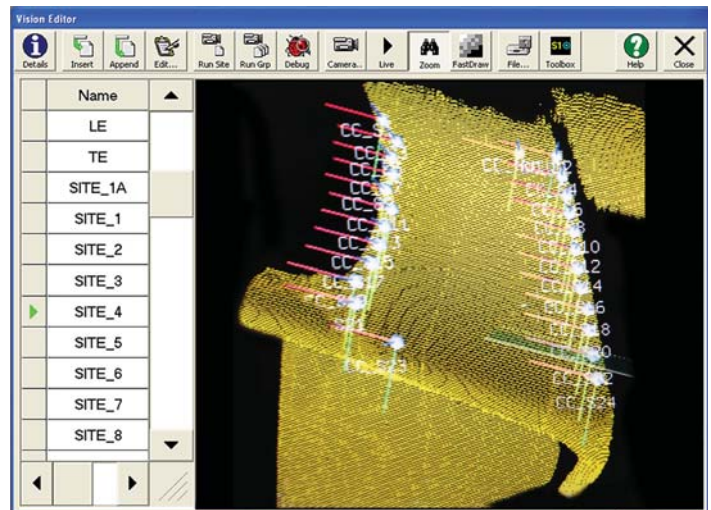
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Features

- High-accuracy scanning technology.
- Direct encoder feedback to establish high accuracy correlation of data profile to sensor location.
- Direct encoder feedback allows for an increase scanning speed which reduces cycle time.
- Point cloud data presented in machine coordinates allowing for build up and width measurements.
- Ability to generate master blade models.
- Ability to fit and interpolate multi-layer weld paths from master blade data to construct near net shape weld build-ups.
- Live automated flyovers to confirm correct site locations.
- Advanced filters to provide consistent scan data.

Benefits

- Simple to establish 3D sites
- No need for multiple picture positions for continuous surfaces
- Does not require machine vision lighting



3D Point Cloud Scan Specifications

	Cameras System	Scanner
Vision Site Repeatability	+/- 0.05 mm	+/-0.025
Machine Vision Lighting Required	Yes	No
Surface Preparation Required	Yes	No – Highly Reflective Surfaces Not Recommended
Scan Speed	85 mm/s	2 mm/s 10 mm/s

Scanner Options

	Base - LJ-G080	High Speed - LJ-V7080
Laser Properties	Red Semi Conductor Laser (655 nm)	Blue Semi Conductor Laser (405 nm)
Field Of View	25 mm @ 57mm 32 mm @ 80mm 39 mm @ 103mm	25mm @ 57mm 32mm @ 80mm 39mm @ 103mm
Sensor Repeatability – Height	1 um	0.5 um
Sensor Repeatability – Width	10 um	10 um
Sensor Trigger Max Speed	3.8 ms	0.016 ms
Encoder	None	NPN open-collector output, voltage output (5 V/12 V/24 V), and line-driver output all supported

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LAWS 800 Laser System with 3D LST™