



AI  
ARTIFICIAL INTELLIGENCE

# DUAL-SOURCE, AI-POWERED WELD QUALITY MONITORING

“90,000,000 welds inspected —only one defective weld missed.”

- Alex Fraser Ph.D. CTO and Cofounder of Laserax



**Laserax’s AI-powered weld quality monitoring solution** delivers real-time insight into every weld, enabling immediate defect detection, reduced unnecessary rework, and stable high-throughput production.

By combining advanced sensing with intelligent AI analysis, the system provides reliable in-process weld quality decisions that support consistent quality, higher yields, and confident manufacturing at scale.

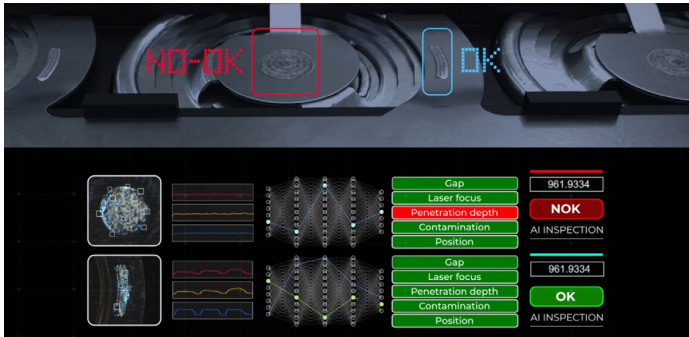
- + 99.9997% yield
- + Ultra-low defect escape rate (1/90,000,000)
- + Near-zero false rejects (up to 20x less than other systems)



# ADVANTAGES

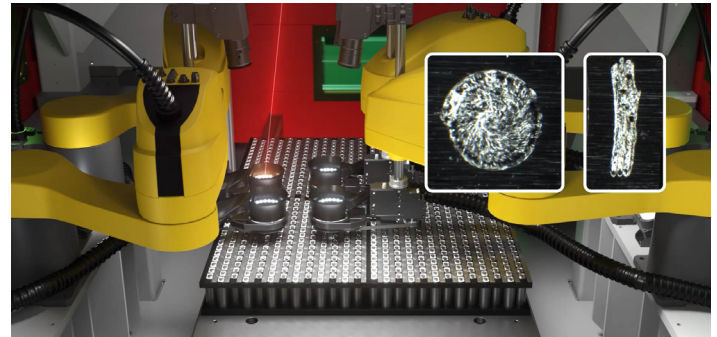
## Highest Detection Rate

- Dual-source: vision + photodiode signals
- Ultra-low defect escape rate
- Up to 700x improved defect detection



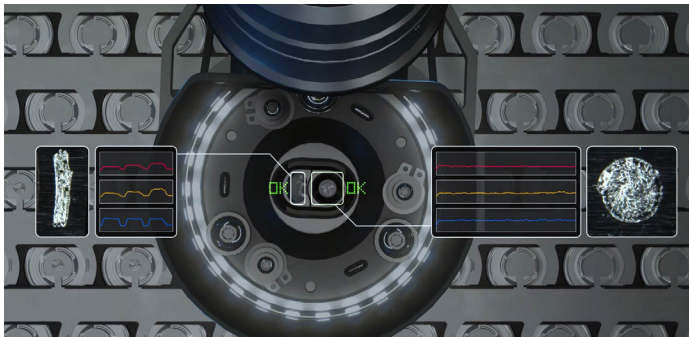
## Lowest False Reject Rate

- AI distinguishes defects from normal variation
- Up to 20x fewer false rejects
- Stable flow, reduced unnecessary rework



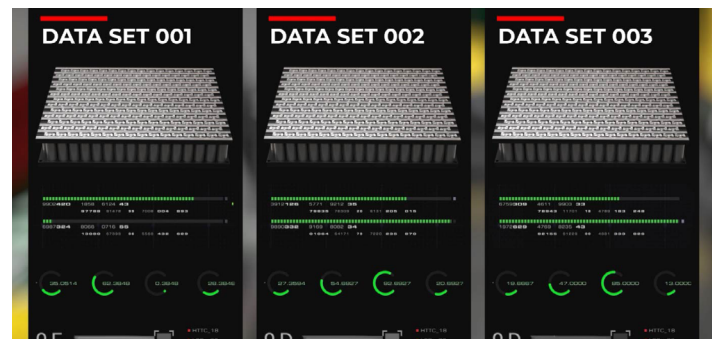
## Real-Time Weld Decisions and In-Process Rework

- Instant OK/NOK at cycle time
- Automatic in-station rework to reach up to 99.9997% yield
- Prevents downstream defect propagation



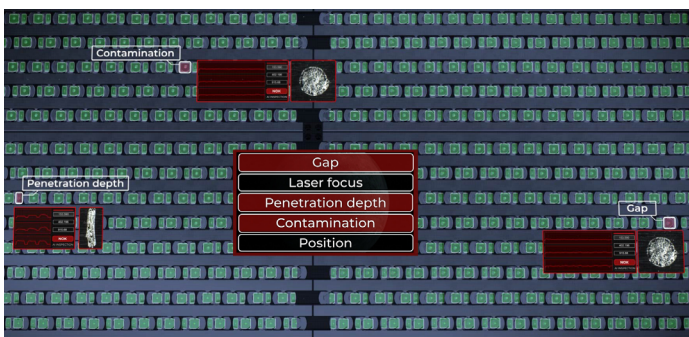
## Fast and Simple AI Deployment

- Same-day model training with ~1,500 welds
- Combination of good and defect-induced welds
- Easy adaptation to new products or process changes



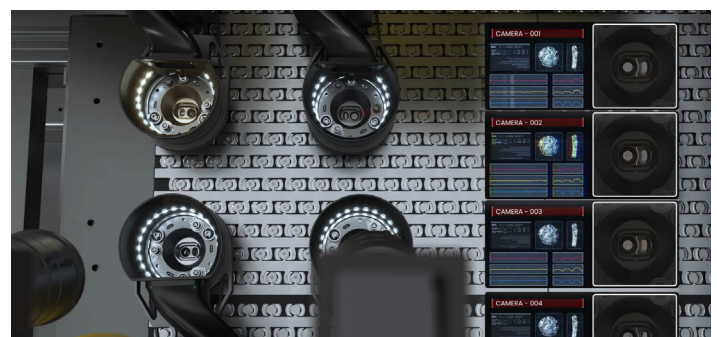
## Intelligent Defect Classification

- Identifies common weld defect types
- Highlights likely process-related causes
- Enables targeted corrective actions

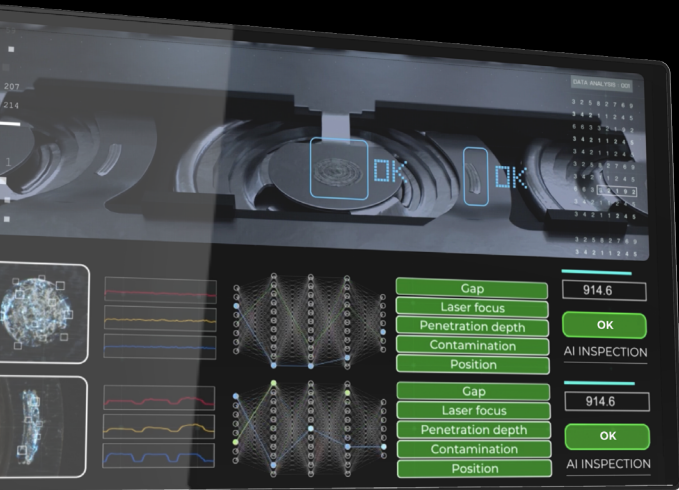


## Complete Weld Traceability

- Full weld-level recording (images, signals, timestamps)
- Audit-ready data with station identification
- Enables continuous improvement and process stability



# SEE THE DIFFERENCE



“After evaluating multiple solutions, Laserax’s AI gives us the speed and reliability we need for battery welding, with precise built-in quality monitoring and real-time validation ensuring consistently high throughput—supported by a team that excels from development to production”

- Karl Fahlström Manager Technology Development at **SCANIA**

Comparative Performance Benchmark		LASERAX	
	Photodiode Typical / Depth Measurement	Single-AI (Vision or Photodiode)	Dual-Source AI
Unidentified Bad Weld*	1 / 130,000	1 / 9,000,000	1 / 90,000,000
False Reject Rate	1 / 15	1 / 300	1 / 150**

\*Based on typical defect rates observed in production

\*\*Value reflects prioritization of maximum detection reliability vs Single-AI

AI Weld Monitoring - Executive Comparison			LASERAX	
Key Performance Criteria	Photodiode Typical	Depth Measurement LDD/OCT	Single-AI	Dual-Source AI
Fine Defect Detection (Porosity, Gap, Contamination)	✗	✗	✓	✓
Ultra-Low Defect Escape Rate	✗	✗	—	✓
Lowest False Reject Rate	✗	✗	✓	✓
Intelligent Defect Classification	✗	✗	✓	✓
Real-Time OK/NOK Decision	✗	✗	—	✓
In-Process Post-Weld Vision Inspection	✗	✗	✓	✓
Complete Weld Traceability: Images, Signals, Metadata	✗	✗	✗	✓

**LASERAX**

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