

Precision laboratory instruments manufacturing

Shimadzu USA MFG transforms quality control with Rapta

This case study examines how Shimadzu USA MFG, a leading manufacturer of precision instruments, implemented Rapta's automated inspection system to dramatically improve their quality control processes. The implementation resulted in:

54%

Reduction in
human labor
inspection time

1,545

Labor hours
saved annually

Prevented
dozens
of potential
defects

Ensured compliance

with FDA requirements

Delivered substantial
cost savings and
quality improvements

"Implementing Rapta reduced our inspection process which allowed us to redirect our resources to other activities."

Shimadzu Automation Team

<p>Customer Shimadzu USA MFG</p>	<p>Industry Precision instruments</p>
<p>Application Deployed Rapta’s automated quality control and inspection system to streamline inspection processes for their Degassing Units.</p>	<p>End use System uses advanced imaging and AI to automatically verify: serial & part matching, text verification & accuracy, component alignment & installation accuracy.</p>
<p>Headline result During the implementation period, Rapta detected and prevented 23 potential defects.</p>	<p>ROI Full ROI within months.</p>

Challenges

Before implementing Rapta, Shimadzu faced several critical challenges in their manufacturing process:

- Quality inspections required 15 minutes per unit, creating a significant labor challenge and potential bottleneck.
- Manual inspection processes were vulnerable to human error.
- Risk of FDA compliance issues if defective products reached customers.
- High labor costs associated with thorough quality control processes.

Solution implementation

Shimadzu deployed Rapta’s automated quality control and inspection system to streamline inspection processes for their Degassing Units. The system uses advanced imaging and AI to automatically verify:

- Serial and part number matching.
- Text verification and accuracy.
- Component alignment and installation accuracy.

Results and impact

Defect prevention

During the implementation period, Rapta detected and prevented 23 potential defects:

- 17 occurrences where serial or part numbers did not match
- 6 instances of incorrect text matching

Assembly Name: 228-65019-58 Rev - 41
 Part Number: 2286501958
 Serial Number: L22176257655
 Description: 228-65019-58 Rev - 41
 Operator ID: 1

Assembly Rev: 41
 Date & Time: October 8th 2024 13:44 PST
 Pass Rate: 75%
 Quality: 100%
 Confidence: 97%

Approver: S Christensen
 Assembly Time: 1 minute 11 seconds
 Benchmark Time: 3 minutes 18 seconds
 Performance: 2 minutes 7 seconds faster
 SW Version: 7.3.0

Failure Summary

Step 5: Serial Number Match
 ❌ FAIL
 Step 5 Incorrect - 100% conf



Step Description: N/A

Step 8: Serial Number Match
 ❌ FAIL
 Step 8 Incorrect - 100% conf



Step Description: N/A

Figure 1: Example serial number mismatch detected

These errors, if undetected, could have resulted in:

- FDA compliance violations.
- Damaged customer relationships.
- Costly product recalls.
- Potential regulatory penalties.

Efficiency improvements

Rapta transformed Shimadzu’s inspection process:

- **Before:** 15 minutes per unit of human labor to inspect.
- **After:** 7 minutes per unit of human labor to inspect.
- **Result:** 54% reduction in inspection time.

Labor savings

With a production volume of around 50 units daily (250 weekly), the time savings translated to:

- 30 labor hours saved per week.
- 1,545 labor hours saved annually.
- Over \$46,000 in direct labor cost savings and one less FTE required per year.



Figure 2: Example part number mismatch detected

Success factors

1. Improved regulatory compliance
2. Enhanced customer trust through consistent quality
3. Reallocation of skilled labor to higher-value activities
4. Increased production capacity without additional staffing

Key learnings

- ✓ Direct labor savings of \$46,000+ annually from a single inspection station
- ✓ Prevention of quality-related costs including rework and potential recalls
- ✓ Avoidance of regulatory compliance issues

Conclusion

By implementing Rapta’s automated inspection system, Shimadzu has not only achieved significant cost savings but has also enhanced product quality, regulatory compliance, and customer satisfaction. The dramatic reduction in human labor inspection time from 15 minutes to 7 minutes per unit transformed their production workflow, allowing them to increase output while reducing costs.

ABOUT

Shimadzu USA MFG

Excellence in Science

Shimadzu U.S.A. Manufacturing, Inc., located in Portland, Oregon, produces key technologies for Shimadzu Scientific Instruments. Operating under Shimadzu Corporation’s global ethos of “Contributing to Society through Science and Technology,” the facility emphasizes innovative manufacturing, local supply chains, and high precision.

ssi.shimadzu.com

ABOUT

Rapta

Manufacturing Intelligence Platform

Rapta delivers manufacturing customers an unfair advantage, unlocking 30% new manufacturing capacity by reducing rework, scrap, and labor. Its Manufacturing Intelligence Platform deploys on standard compute hardware to automate AI for manufacturing, inspection, and process control through a visual, no-code action builder.

rapta.ai

See It on Your Line

Rapta deploys on-premises, integrates with your existing MES, and is operational in weeks. Talk to us about a deployment assessment.

rapta.ai/get-a-demo