

SHIMADZU USA MFG TRANSFORMS QUALITY CONTROL WITH RAPTA AI

EXECUTIVE SUMMARY

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.
- Prevented dozens of potential defects.
- 1,545 labor hours saved annually.
- Ensured compliance with FDA requirements.
- Delivering substantial cost savings and quality improvements.

CLIENT PROFILE

Company: Shimadzu USA MFG

Industry: Precision Laboratory Instruments Manufacturing

Challenge: Labor-intensive manual inspection processes that were prone to human error.

Period Analyzed: September 1, 2024 - February 19, 2025

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	Assembly Rev: 41	Approver: S Christensen
Part Number: 2286501958	Date & Time: October 8th 2024 13:44 PST	Assembly Time: 1 minute 11 seconds
Serial Number: L31024956091	Pass Rate: 75%	Benchmark Time: 3 minutes 18 seconds
Description: 228-65019-58 Rev - 41	Quality: 100%	Performance: 2 minutes 7 seconds faster
Operator ID: 1	Confidence: 97%	SW Version: 7.3.0

Failure Summary

Step 5: Serial Number Match

❌ **FAIL**

Step 5 Incorrect - 100% conf

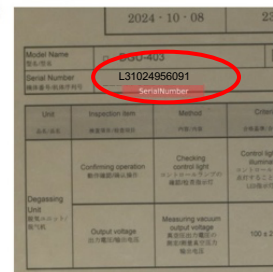


Step Description: N/A

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



Figure 2: Example Part Number Mismatch Detected

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

ADDITIONAL BENEFITS

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

CUSTOMER TESTIMONIAL

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

RETURN ON INVESTMENT

Shimadzu achieved full ROI within months of implementation through:

- 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 has transformed their production workflow, allowing them to increase output while reducing costs.