

One-month breakeven using superhuman inspection to achieve zero defect escapes



Overview

Ensuring quality control in mission-critical electronics is not just a mere priority—it's a matter of life and death. A single defect can have catastrophic consequences for end-users and cause significant damage to a brand's reputation. Unfortunately, manual inspection processes can be time-consuming and prone to human error, leading to costly consequences.

This case study illustrates how this particular mission-critical electronics company was able to prevent defect escapes, boost quality, and increase efficiency by automating their manual inspections with superhuman AI.

ABOUT

COMPANY

\$50B Communications Leader

PRODUCT

First Responder Radio

USE CASE

Improve quality and yield in production

PRODUCTION

US Based

PRODUCTION MIX

Multiple SKUs

VOLUME

20K+/Year



Challenge

This customer prioritized preventing escapes with four human inspectors dedicated to end-of-line quality checks. Even though this is beyond best practices, they still occasionally had escapes that caused lot-level rejections from their customers.

They had already gone beyond best practices to do end-of-line inspection in quadruplicate, but still had escapes.



Defects escaping factory

A critical defect could mean the difference between life and death for first responders.



Risk of large returns and brand damage

A single faulty device could lead to losing the entire contract and brand image.



Inconsistent inspection

Manual inspection is time-consuming and prone to human errors.

Solution

Using visual data, Instrumental offered a complete solution to automatically intercept known and unknown defects.

✔ Known defect discovery

The customer leveraged AI-powered *Monitor* to set up tests for known defect types with as few as thirty units of sample data. *Live Monitors* enable interception of known issues on the line when they appear.

✔ Unknown defect discovery

They also used Instrumental's unique *Discover AI* to identify novel defects automatically. To prevent escapes, the customer leveraged real-time *Discover* to intercept suspicious units right on the line for humans to double-check.

Together, these features helped ensure that the manufacturing process is optimized for quality and productivity.



Prior visual inspection systems could only catch known defects. The interesting aspect of Instrumental is to catch unique [and unknown] defects.



Director of Manufacturing NPI

Results

Our customer validated a one-month breakeven on their Instrumental technology investment by achieving superhuman results for their quality inspection, with minimal false positives*.



4.6%

Operator escapes prevented



75%

Operator headcount reduction



63%

Reduction in inspection time



\$780K

Revenue loss prevention



\$156K

Operational savings

1 month

Breakeven

*2.4% false positive rate, a 13X improvement over the industry benchmark.

