

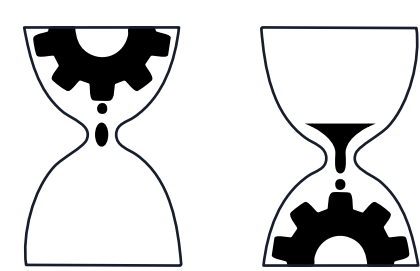
# SKILLED WORKFORCE SHORTAGE

## THE WEAKENING HUMAN TOUCH

Food and beverage manufacturing has always depended on human expertise that machines can't replicate - bakers who know by touch when dough has the right elasticity, brewers who can detect off-flavors before lab tests confirm them, line operators who hear packaging equipment about to jam. But that expertise is disappearing. Experienced workers are retiring faster than they can be replaced, vacancy rates in F&B are outpacing broader manufacturing, and critical sensory knowledge is walking out the door. This workforce crisis threatens quality, consistency, and operational continuity. Yet manufacturers must maintain strong competitiveness despite weakening human touch.

## INDUSTRY INSIGHTS & STATISTICS

### The brain drain crisis:



**97%**

of manufacturers express significant concern about losing expertise from retiring workers, with nearly a quarter of the U.S. food manufacturing workforce aged 55 or older.

### Undocumented knowledge at risk:



**70%**

of critical knowledge may be lost with retiring engineers - expertise that's sensory, contextual, and often unconscious, making it nearly impossible to capture through traditional documentation.

### Retirement drives attrition:



**82%**

of workforce departures are retirement-driven, and each skilled worker lost costs 20,000\$-40,000\$ to replace, with 62% of companies reporting turnover is getting worse.

### F&B vacancies outpace manufacturing:

Vacancy rates in Food & Beverage can exceed broader manufacturing averages - UK data shows F&B at 4.2% (Q2 2025) compared to 2.0% for manufacturing overall and 2.3% UK-wide, with mid-size businesses facing the most acute challenges at 5.8%.

### Millions of positions unfilled:

Up to 1.9 million manufacturing positions in the U.S. may go unfilled by 2033, while Canada's F&B sector needs 142,000 new workers between 2023-2030 - but the structural shortage isn't going away.

### Training gap widens crisis:

Small F&B businesses provide 7% less job-specific training than larger companies, while 39% of current skills will need reconfiguration by 2030 - yet most lack resources to prepare.

## HOW TO MAINTAIN PRODUCTIVITY

- ▶ **Automate quality inspection** - Deploy AI-powered visual systems that maintain consistent screening without specialized expertise.
- ▶ **Simplify operations through better interfaces** - Provide touch-screen controls that put diagnostic power at operators' fingertips.

- ▶ **Digitize expertise before veterans leave** - Capture sensory knowledge through connected equipment that monitors what experienced workers assess by feel, sound, and sight.

- ▶ **Choose automation anyone can operate** - Implement collaborative robots with intuitive "direct teach" programming that eliminates training barriers.

- ▶ **Enable predictive maintenance** - Connect equipment to analytics platforms that predict failures without relying on veteran intuition.

# CASE STUDIES

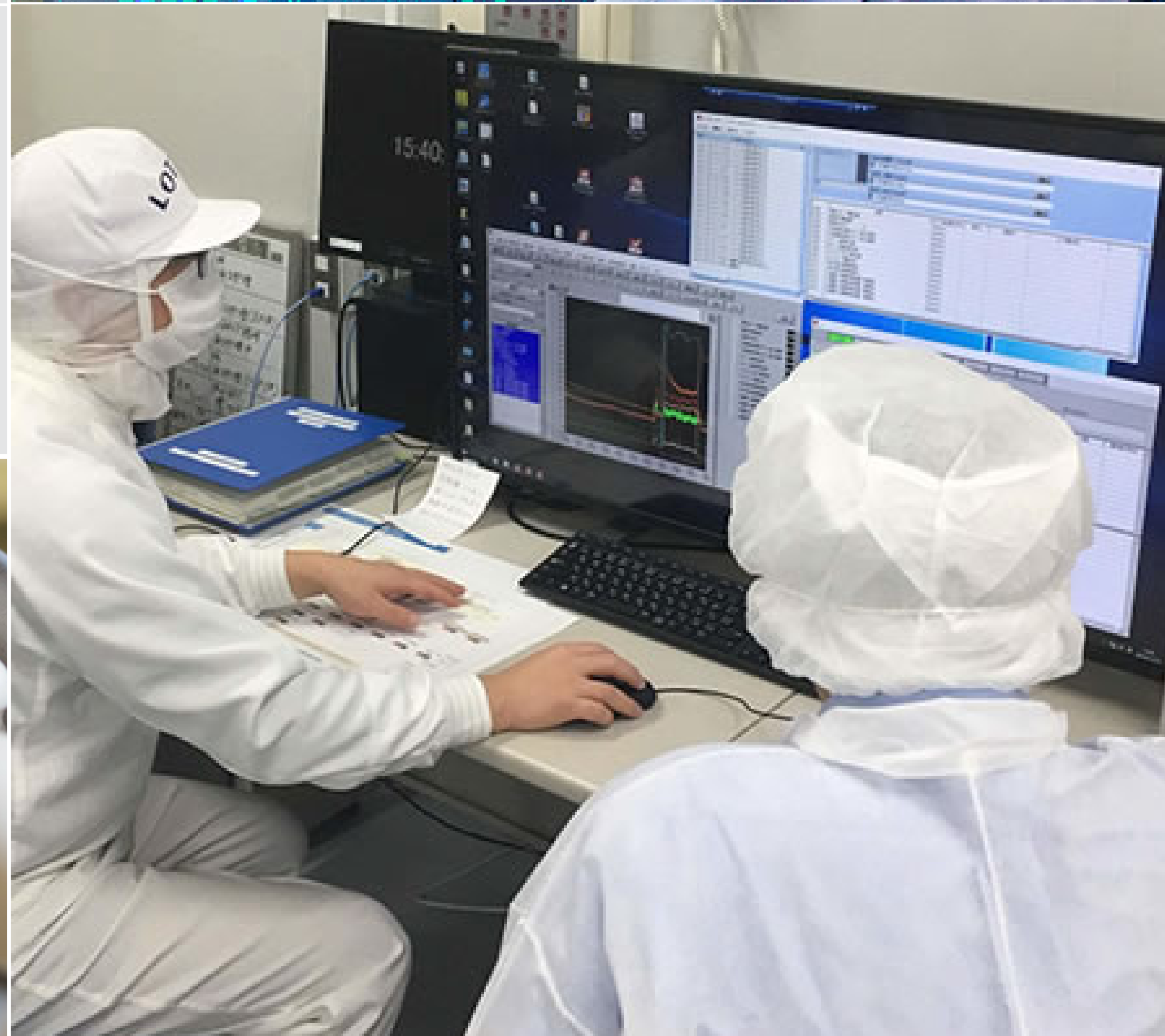
## ▶ LOTTE CORPORATION: DIGITIZING DECADES OF EXPERTISE

### ● CHALLENGE

Manufacturing Yukimi Daifuku (ice cream wrapped in mochi rice cake) required veteran operators who could "feel" the perfect rice cake consistency and adjust blending ratios throughout the day based on temperature and humidity. "Losses arose from the need to finely adjust machine parameters," explained the Facilities Manager. With experienced engineers approaching retirement and future labor shortages anticipated, this irreplaceable sensory knowledge was at risk of being lost forever.

### ▲ SOLUTION

Implemented comprehensive IoT sensor network and data analytics platform, capturing temperature, vibration, pressure, and current data that experienced workers previously assessed through sensory evaluation. The system monitors conditions in real-time and issues automated adjustment instructions.



### ▲ RESULTS

**Expertise preserved and automated:** "Previously experienced staff checked and adjusted settings, but now machines themselves issue instructions to make adjustments".

**Consistent quality independent of operator:** Same texture and taste regardless of season, time of day, or who's on shift.

**Preventive maintenance enabled:** Real-time monitoring catches problems before they affect product quality or cause downtime.

**Knowledge transfer accelerated:** "We aim to deploy this system across numerous lines to construct a smart plant".

**Adaptive to conditions:** Machines automatically adjust parameters as temperature varies throughout the year.

# CASE STUDIES

## ▶ SHIKOKU KAKOKI: AN EXTRA PAIR OF DIGITAL EYES

### ● CHALLENGE

Shikoku Kakoki has acutely recognized the "increasing trend towards a shortage of workers" and adopted a dual strategy to address it. On one side, traditional filling machines relied on mechanical cams that required labor-intensive physical replacement for every product change. On the other, relying on human visual inspection for delicate tofu products created risks of fatigue and consistency issues as experienced staff became harder to find.

### ▲ SOLUTION

Collaborated with Mitsubishi Electric to digitize motion control, replacing complex mechanical cams with advanced servo systems to simplify operations and standardize cleaning cycles. Building on this automation, they integrated AI-driven diagnostic imaging to inspect every single product, effectively supporting the "human eye" in quality control.



### ▲ RESULTS

**Zero training barrier:**

"The mechatronic engineer doesn't need to have had any training - he can handle the equipment intuitively".

**Fastest visualization available:**

"I have never seen such fast visualisation before," enabling rapid response to production issues.

**Local serviceability:**

Standard Mitsubishi components enable maintenance without factory specialists, critical for international operations.

**Seamless line integration:** Compatible with upstream/downstream equipment, simplifying overall operation and reducing coordination complexity.

**Rapid deployment:** Complete project realized in less than 6 months, minimizing time-to-production.

# ANSWER THE LABOR SHORTAGES WITH AI-DRIVEN QUALITY INSPECTION



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## ▲ SOURCES

- ▶ <https://foodindustryexecutive.com/2025/09/future-proofing-food-manufacturing-to-close-the-workforce-gap/>
  - ▶ <https://foodindustryexecutive.com/2025/09/how-food-industry-leaders-are-solving-the-skills-shortages/>
  - ▶ <https://foodindustryexecutive.com/2025/09/overcoming-the-gray-wave-knowledge-transfer-strategies-before-baby-boomers-retire/>
  - ▶ <https://www.fdf.org.uk/globalassets/resources/publications/reports/soi-q2-2025-report.pdf>
  - ▶ <https://www.fcc-fac.ca/en/knowledge/economics/labour-market-trends-food-beverage-manufacturing>
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