

Case Study: Inconsistent Product Weight & Packaging (Pakistan)

GIBES INOV – Quality Control & Closed-Loop Automation Solutions

Industry Overview

The Pakistani food and beverage sector faces significant challenges with packaging accuracy and material efficiency. Key issues include:

- Inconsistent product weights causing regulatory non-compliance.
- Excess material giveaway leading to financial losses.
- Manual QC checks with delayed feedback, preventing real-time adjustments.

Client Background

A leading snack food manufacturer was struggling with:

- Over-filling packages due to inaccurate feedback from check-weighing systems.
- Inefficient, time-consuming quality control procedures.
- Financial losses from excess material giveaway.

Key Metrics

| Metric | Before GIBES INOV | After GIBES INOV | Result |
|-----------------------------------|-------------------------|------------------------|------------------------|
| Product Weight Variance (Std Dev) | High (0.8g over target) | Low (0.1g over target) | 80% Variance Reduction |
| Annual Material Giveaway Cost | \$150,000 | \$15,000 | \$135k Savings |
| Manual QC Check Rate | 1 every 30 minutes | Continuous | 100% Coverage |

Challenges & Constraints

- Check-weighing feedback was slow, resulting in over-filled packages.

- Manual quality inspections could not catch every discrepancy in real-time.
- Financial impact of material giveaway was significant and recurring.

GIBES INOV Solution Architecture

Hardware Implementation

- High-speed dynamic checkweighers with 0.01g accuracy installed at each filler line.
- Sensors calibrated for fast, precise detection of each package weight.

Control Logic

- High-speed Ethernet/IP communication protocol linking checkweighers to the filler PLC (Rockwell MicroLogix).
- Closed-loop algorithm adjusts filler volume dynamically based on the last 5 package weights.
- Continuous correction ensures minimal variance and reduces overfilling.

Data Visualization & Analytics

- HMI dashboard displays real-time average weight, standard deviation, and correction factor.
- Operators can monitor performance and intervene if needed, ensuring consistent quality.

Deliverables

- Integrated checkweigher system.
- PLC code modifications for closed-loop control.
- Operator training on HMI and reporting dashboards.

Implementation Timeline

- **Week 1–2:** System design, hardware installation, and sensor calibration.
- **Week 3–6:** PLC programming, HMI setup, testing, and operator training.

Results & Impact

- Product weight variance reduced by 80%.
- Annual material giveaway cost decreased by \$135,000.
- Quality control became continuous and real-time, enhancing production efficiency and compliance.

About GIBES INOV

GIBES INOV provides advanced industrial automation solutions, delivering measurable improvements in process efficiency, quality control, and ROI for manufacturing clients.