

Case Study

BOTTLING COMPANY GUIDED CHANGEOVER SOLUTION

Industry: Beverage; Customer: Soft drink bottling franchisee operating multiple plants.

Summary: Using Balluff's innovative Guided Changeover Solution (GCS), a leading soft drink bottler markedly decreased downtime, reduced costs, and significantly boosted its Overall Equipment Effectiveness (OEE) across all labor shifts. The solution empowers operators of all experience levels to execute format changes autonomously, without the need for an experienced supervisor.

SITUATION

The bottling company, operating under a globally recognized beverage brand's franchise, specializes in manufacturing and filling cans and bottles. Multiple products with packaging of different sizes and materials are run on the same lines requiring regular adjustments to the palletizers. The adjustments must be made with precision to ensure the brand's high-quality standards and to minimize scrap (rejects) and downtime.

CHALLENGE

The absence of a system allowing operators, irrespective of their experience, to independently conduct changeovers led to significant inefficiencies. Heavy reliance on skilled production supervisors to execute the format changes created bottlenecks, particularly during afternoon and night shifts when supervisor availability is limited. This exacerbated downtime, created waste, and adversely affected the production line's overall equipment efficiency (OEE).

SOLUTION: GUIDED CHANGEOVER SOLUTION (GCS)

Given the company's positive experience with Balluff's products, team leaders turned to Balluff for support. Balluff's Guided Changeover Solution (GCS) was selected to address this challenge. Demonstrations and virtual meetings fostered trust in both Balluff and the GCS solution.

The GCS is a semi-automated solution that guides operators through each changeover process using an intuitive handheld tablet interface. Its robust sensor technology and RFID components provide immediate feedback, confirming whether the operator has properly set the dimensions and selected the correct format parts. The system enhances (OEE) by reducing both downtime and waste and can be retrofitted to existing production lines.



"The system has greatly improved our palletizer changeovers, reducing downtime and increasing productivity. I'm eager to expand its use to other machines in our plant to replicate these benefits."

— Production Supervisor

HOW IT WORKS

The Guided Changeover Solution (GCS) combines sensor technology with user-friendly software, offering operators comprehensive support during changeovers. The key features that make GCS an efficient, semi-automated solution:

Sensor integration and feedback: GCS's advanced sensors provide real-time feedback for precise adjustments to guideway settings, improving accuracy and streamlining the changeover process.

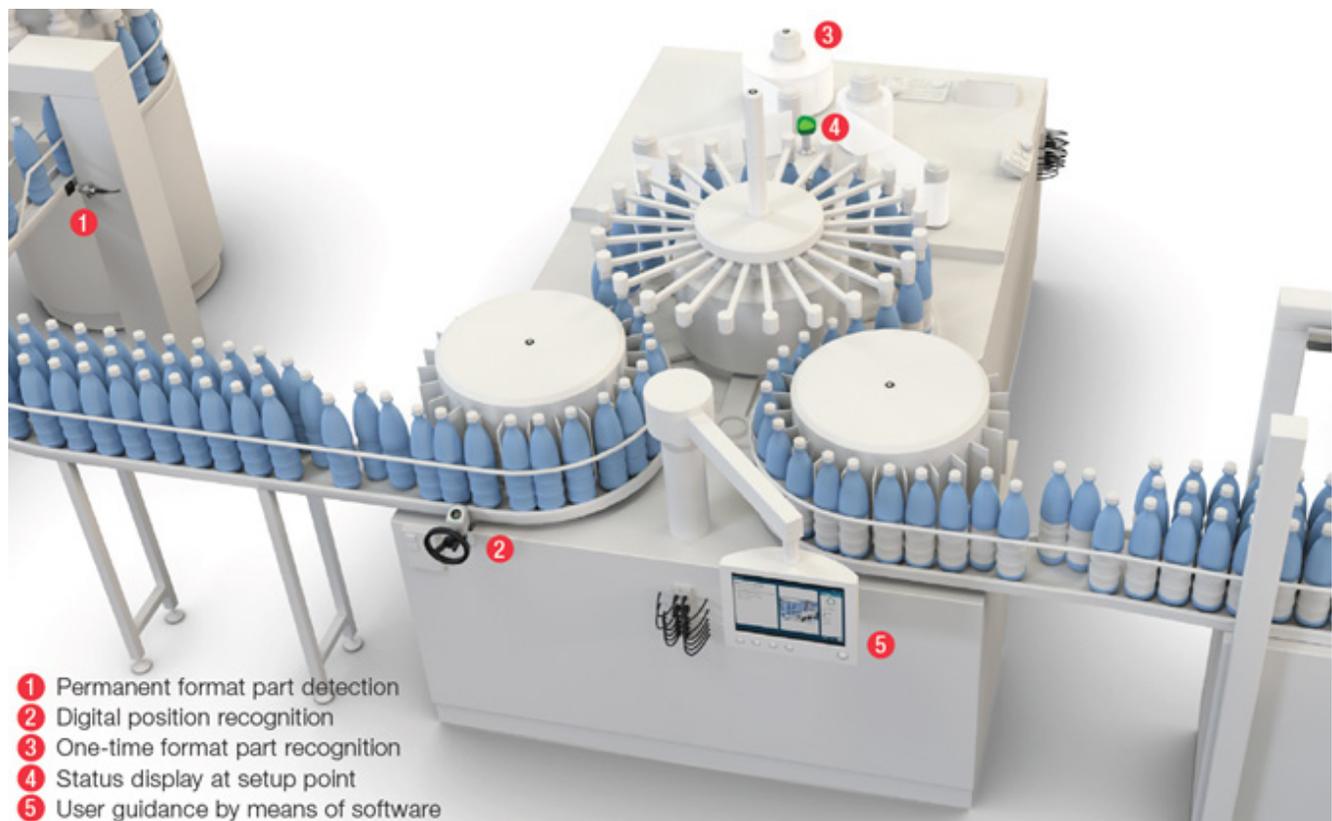
RFID technology for part verification: Using Balluff's RFID technology, the GCS ensures that the correct parts are used to maintain high production standards.

Visual guidance and LED indicators: The system uses an LED stack light for visual guidance, with color coding to indicate machine status. This, combined with step-by-step instructions from the GCS software, minimizes downtime and errors.

Multi-language and multi-device software: GCS software is versatile, supporting multiple languages and is compatible with multiple devices such as tablets and displays, increasing accessibility for different operators.

Easy installation and learning: Designed for easy installation and with an intuitive software interface, GCS allows operators to quickly learn and effectively manage the conversion process.

Cross-industry adaptability: Beyond soft drink bottling, GCS's modular design makes it adaptable to different production lines and industries, from food packaging to automotive, to meet specific changeover requirements.



"The convenience of not having to use a ruler for measurements is a game changer. The system effectively displays the measurements and guides us where to set them, making the process much more efficient and error free."

– Machine Operator

BALLUFF PRODUCTS IN USE

The following Balluff products were integral to the implementation of the GCS system:

GCS gateway & software: This is the heart of the solution, creating workflows and guiding operators step-by-step. It increases productivity and minimizes errors by monitoring sensors in real time during production.

Photoelectric sensors These optical sensors are required for precise adjustments during changeovers and provide non-contact object detection to streamline the process and reduce errors.

Inductive proximity sensors: These non-contact sensors detect metal objects, which is critical for accuracy during size changeovers. They increase reliability and minimize operator error in the bottling industry.

IO-Link masters: These devices manage communication between various sensors and actuators in the GCS, ensuring smooth integration and optimized operation during changeovers.

SmartLight: This LED lighting system provides visual feedback through intuitive color coding, simplifying the changeover process for operators by reducing errors and downtime.



BENEFITS OF GCS IMPLEMENTATION

The implementation of Balluff's Guided Changeover Solution (GCS) has resulted in several significant improvements to the soft drink bottling franchisee's operations:

Increased Overall Equipment Effectiveness (OEE): The implementation of the GCS has resulted in an improvement in overall equipment effectiveness. This improvement is primarily due to the reduction in downtime, which optimizes the efficiency of the production process.

Significant reduction in downtime: One of the most notable benefits has been the dramatic reduction in downtime. As reported by the Director of Continuous Improvement, downtime has been reduced by more than 70%, from 7 hours to just 2 hours each month. This reduction not only increases productivity, but also translates into significant cost savings. With the cost of downtime for this production line estimated at \$1,800 per hour, the savings adds up to a remarkable \$9,000 per month.

Efficient training of new operators: The GCS system's user-friendly, intuitive interface and clear, step-by-step instructions have greatly streamlined the training process for new operators. This has resulted in a faster and more efficient onboarding process, allowing employees to quickly become proficient in managing the changeover process.

FUTURE COLLABORATION

The success of the initial project has encouraged the bottling company to consider implementing the GCS system on other machines/lines that require manual changeovers. An evaluation is underway for a possible installation on a shrink packer at a sister plant, strengthening what has become a very positive relationship between Balluff and the bottling company.