

## Boosting Customer Satisfaction at one of the World's Largest Chocolate Companies



With the “RTS Automatic Inspection and Rejection System”

### Automating the detection and removal of defective wafer chocolate bars.

One of the **world's largest chocolate companies**, with headquarters in Europe, was looking to **automate** the **detection & removal of solid bars** in its best selling wafer crisp chocolate product.

Prior to implementing the RTS solution, the customer had **no way of consistently inspecting the pre-enrobed internals of the chocolate bars and subsequently removing them before packaging**. All the customer could do was removing bars based on external cosmetic non conformance.

The Quality Control and Assurance Department needed a solution to ensure they would always meet their quality standards and reduce the level of **customer complaints**. They needed a guaranteed, turn-key solution to **remove 100% of defective bars** in their top national product and thus, protect their brand.

After several failed attempts using in-house systems, as well as other proposed solutions from different companies, **Real Time Systems (RTS)**, was selected to develop and implement a world class innovative and quality engineered solution.

### The Challenges

The main challenge for the RTS team was to develop a complete automation solution that would: **1) Inspect the “internals” of the bar before** being enrobed in chocolate, **2) Provide operator thresholds of acceptability** of the pre-enrobed chocolate bar, **3) Track** the chocolate bars across the **entire production process** and, **4) Provide a high speed pick and place reject system**.

Some of the more complex technical challenges that needed to be solved included:

- **High Speed:** The system needed to deploy powerful servo's to complete **rejection cycle in less than 1 second**.
- **Different product parameters:** The adaptation of existing automation techniques to address the requirements of the production line of **products of different dimensions and weights**.
- **Specialized Technology:** The development of specialized equipment & instrumentation utilizing **high speed vision cameras, data capture & tracking technology**, multiple servo motors and pneumatics.
- **Sanitary procedures:** The need for hygienic design for the pick up process as well as cleaning and decontamination was imperative.

## RTS Automatic Chocolate Bar Inspection and Rejection System

After performing a detailed timing and process study RTS' application engineering team designed and developed a **100% product vision inspection and robot rejection machine, which** picks up the different types and sizes of non-compliant solid chocolate bars as they pass by, at all manufacturing speeds based on production requirements.

The system configuration is based on a modular, scalable high-performance control platform – **Allen-Bradley (AB)<sup>®</sup> ControlLogix** suited for sequential control. A Vision System was also designed using multiple **Cognex<sup>®</sup> Vision Cameras** to inspect for the presence of internal chocolate bar components.



The system inspects the molds automatically via a high speed multi-camera Vision System prior to the final layer of chocolate application. After molds pass through a chiller, bars get de-molded on a separate conveyor belt.

The Rejection System then carefully removes the solid bars using the purpose designed pick 'n' place mechanism on to a reject conveyor belt.

## The Benefits

- **Superior Customer Satisfaction:** The RTS' solution provided **Zero Defects** by rejecting solid bars, thereby reducing customer complaints, and improving buyer satisfaction.
- **Improved Quality:** The RTS solution **automated** the inspection and rejection **process of defective product**. The degree of acceptable defect in a bar can now be easily set from 0% to 100% of wafer volume by authorized quality personnel, even during runtime.
- **Increased labor utilization:** Automated process eliminated rework, re-inspection and expenditures associated with manual inspection and rejection processes. Additionally, operators no longer need to focus on quality; they can dedicate their full attention to running the line.
- **Corrective and Preventative Action (CAPA) actionable intelligence:** the RTS system provided insight and supporting statistics as to the specific production area which led to the non-conformance issue, notifying the maintenance & quality team on **which feeder machines to make the necessary adjustments** to reduce the generation of solid bars and increase throughput.

RTS' capability to provide effective **turnkey solutions** through a combination of a highly dedicated engineering team, **advanced technology deployment, industry expertise**, training, documentation and support services enabled this project to be a huge success for our client.

Real Time System's ability to deliver results is due to a combination of our highly skilled technical team, our industry knowledge and our **"PROJECT METHODOLOGY"**.



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