

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 chocolates 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)[®] ControlLogix** suited for sequential control. A Vision System was also designed using multiple **Cognex[®] 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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