

Customer

A large-scale bakery in the Eastern U.S.

Customer Requirements

Consistent, automated measurement of bread dough and baked loaves for quality control in high-volume bakery

Partner

Shingle & Gibb Automation
www.shingle.com

Banner Solution

- A-GAGE[®] High-Resolution MINI-ARRAY[®]
- L-GAGE[®] Q50 Series Sensor

Why Banner?

Affordability – Strategically located sensors deployed on the baking line are a fraction of the cost of more complicated solutions

Simplicity – Sensors were easy to install and adapted to existing infrastructure, resulting in minimal production downtime

Support – Banner partner provided expert selection and installation assistance as well as offering on-going system support

Customer Benefits

Reliability – Q50 sensors use optical triangulation to measure for height and depth

Consistency – On the line monitoring enables early detection of potential problems and ensures product quality after baking

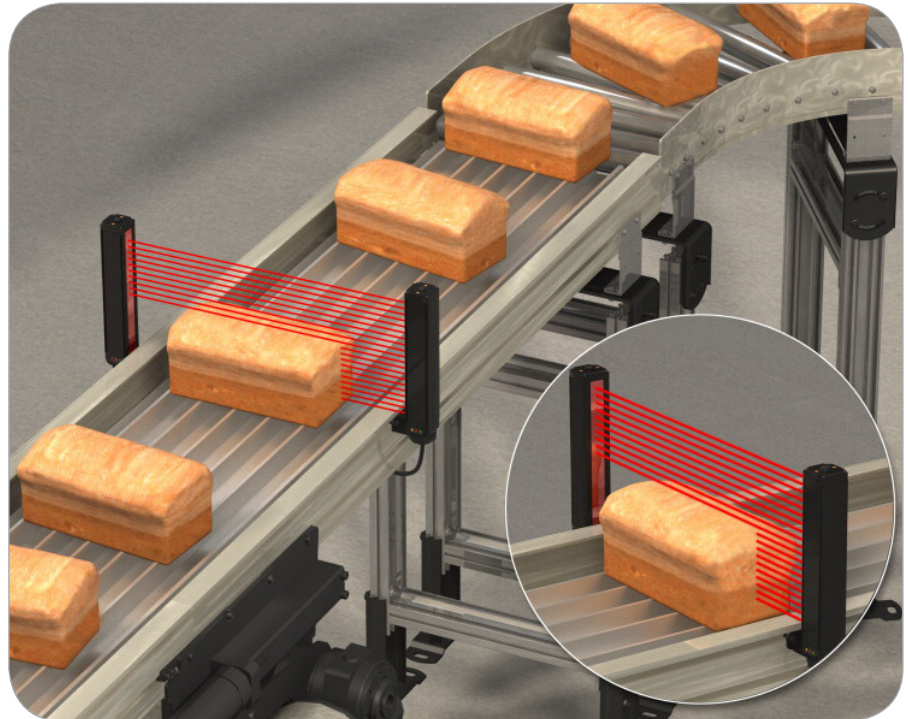
Accuracy – A-GAGE High-Resolution MINI-ARRAY features 120 sensing beams per foot to create a highly-accurate light screen for precise measurement

Learn More

Visit www.bannerengineering.com for product information and to locate a distributor

- [A-GAGE High-Resolution MINI-ARRAY overview](#)
- [L-GAGE Q50 Series Sensor overview](#)

Building-In Consistency for Quality Control – Banner Sensors Help a High-Volume Bakery –



A-GAGE[®] High-Resolution MINI-ARRAY measures the height of baked bread

Background

Over many decades of operation, an industry-leading bakery has earned a reputation for delivering high-quality fresh bread and other baked goods. Today, their products can be found in hundreds of thousands of kitchens throughout the Eastern United States. Meeting these demands requires large investments in raw ingredients, energy and machinery. The bakery relies upon skilled bakers and a knowledgeable staff to operate automated baking equipment, manage resources and ensure quality.

Challenge

The bakery's multi-staged baking process begins with mixing, kneading and fermentation and completes with proofing, baking and cooling. At each stage, experienced bakers perform quality checks for appearance, texture, size and weight. Loaves that do not meet the company's standards are rejected for consumer sales. The company needed to build-in system capabilities to help them better manage their resources and maintain quality standards.

First Implementation

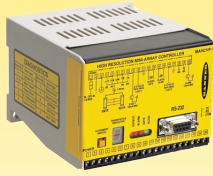
Working with Shingle and Gibb Automation, a long-time Banner partner, the company deployed the A-GAGE[®] High-Resolution MINI-ARRAY[®] onto the baking conveyor line. This emitter and receiver pair features two columns of tightly spaced beams to create a precise light screen capable of distinguishing measured

MINI-ARRAY Features:

The A-GAGE® High-Resolution MINI-ARRAY® light screen excels at high-speed, precise monitoring and inspection applications.



A-GAGE® High-Resolution MINI-ARRAY® measuring light screen and control module



- Programmable controller offers a selection of measurement modes, scan modes and output configurations
- 120 sensing beams per foot for reliable detection of objects as small as 2.5 mm
- Programmable blanking, hysteresis and serial communications
- Broad range of available array heights from 163 to 1951 mm
- Includes controller, emitter/receiver pair and interconnecting cables

L-GAGE Q50 Features:

The L-GAGE® Q50 is a cost-effective and easy-to-use triangulation sensor that combines laser-like performance with LED safety and economy.



L-GAGE® Q50 Series Sensor with Analog Output

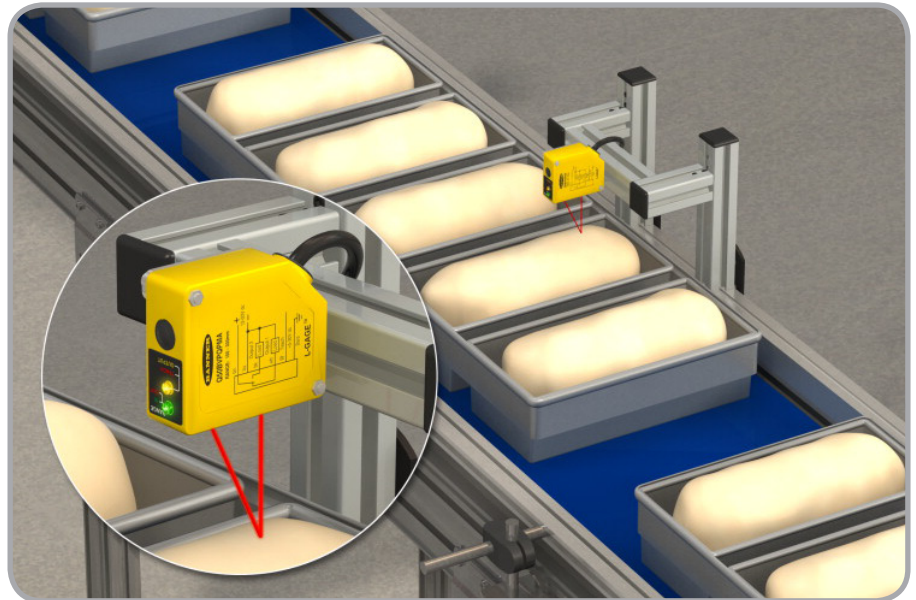
- Easy-to-use TEACH-mode programming requires no potentiometer adjustments
- Selectable output response speeds from 4 to 64 milliseconds
- Scalable analog output distributes the output signal over the width of the programmed sensing window
- Available in discrete or analog models
- Rugged IEC IP67 NEMA 6 rated enclosure withstands challenging environments
- Flexible mounting configurations
- Sensor linearity is better than 3mm

variances as small as 2.5 mm. The light screen measures each loaf as it cools on the conveyor line between the tunnel oven and the slicer. If a loaf does not meet bakery guidelines, a signal is sent to a compact control module, and the loaf is removed from the line.

The initial implementation of Banner sensors was highly successful, facilitating greater consistency in quality control on the baking line. However, there was a recognized opportunity to add resource management capabilities to the system using Banner sensors.

Second Implementation

Shingle and Gibb deployed L-GAGE® Q-50 series sensors on the transfer conveyor. These LED-based linear displacement sensors use optical triangulation to detect for depth and height. As the dough emerges from the proofing oven, the Q50 measures the height of the dough inside the baking pan. Irregularly sized dough is identified, removed from the line prior to baking and saved for future use. The bakers can then make necessary adjustments to time, temperature and humidity at the proofing stage.



L-GAGE® Q50 Series Sensors used to detect the height of bread dough

Conclusion

This high-volume bakery benefitted from the accuracy, reliability and simplicity of the Banner sensors. The L-GAGE Q50 with its laser-like performance proved ideal for measuring dough inside the pan, but with the safety and affordability of an LED sensor. The high-speed operation and precise monitoring of the A-GAGE High-Resolution MINI-ARRAY ensured that baked loaves that did not meet required standards could be identified and removed without disrupting the line. The Banner sensors provided the bakery with enhanced quality control and resource management functionalities without requiring complicated changes to system design or existing infrastructure.