Automated Inspection & Intelligent Material Handling for Pizza Crust and Toppings

MONTROSE
TECHNOLOGIES INC.

www.montrose-tech.com

Montrose inspection and handling systems provide a complete inspection, rejection, and handling solution created just for bread manufacturing lines. Receive comprehensive statistical analysis of variability while removing human involvement from inspection, rejection, and laning.

A high speed, turnkey system that allows you to:

1. Assure quality on a 100% monitoring basis.
2. Remove individual defective and non-conforming product from the line.
3. Monitor process statistics to pinpoint causes of waste.
4. Equally feed in-spec buns into each of the packaging lanes.
5. Automatically buffer in the case of bottlenecks.
6. Rapidly recognize a positive ROI by improving quality, reducing waste, and automating production - in previously labor intensive areas.

Solution Components	FocalPoint	MT Series	AutoLaner
Inspection	☑	☑	
Bottom Color Inspection		☑	
Automated Rejection		☑	
Laning for Entrance to Packaging			☑
In-line Accumulation/Buffering		☑	☑
Color Imaging	☑	☑	
Statistical Analysis and Reporting	☑	☑	
Nema 4X	☑	☑	☑
3A Dairy Sanitary Design		☑	

MT24 Pizza Inspection System

Isolate and Eliminate Sources of Waste

Automated inspection provides real-time and historical information on fault, and out-of-spec conditions, allowing you to isolate the issues causing the most waste by shift, product, line, and plant. The measurement results will also make it easier to reach consistent quality when developing new products or when formulation changes are made.

| Analysis Type	Example Faults	Impact on Customer or Plant	Rejection Capability	Statistical Analysis
Geometrical Analysis	Too large or small To tall or short	Product rejection	0-100% fully under plant control	SPC Analysis On-line
	Ovality Doubles	Customer complaints		Reporting
	Poor symetry Crushed/dented	Handling problems, such as jamming at the slicer/bagger		Worst fault Pareto
Color Analysis (Top and Bottom)	Under/over- baked Visible Debris	Consumer Complaints	0-100% fully under plant control	SPC Analysis On-line
	Blisters Blotchy	Product rejection		Reporting
	Foreign material Too much/little topping Heel flour White rings	Topping giveaway		Worst Fault Pareto

Measure, Analyze, Reject

The MT Series inspection system may be installed immediately after the depanner for fast real-time data, or just before packaging where the system acts as the 'gate-keeper'. A vision system and Autolaner combination assures smooth flow of quality with the removal of oversized product, belt speed changes, diversion, and/or lane balancing.

Common Analysis
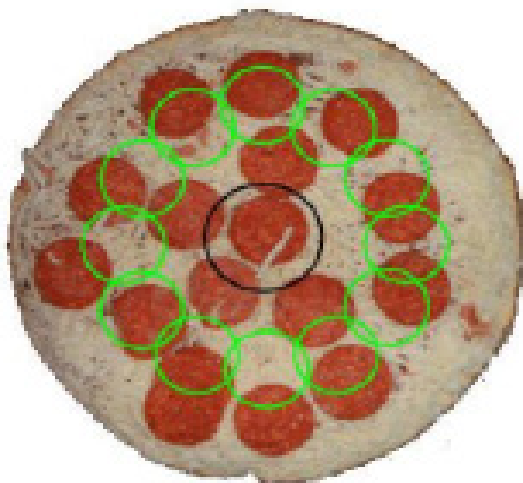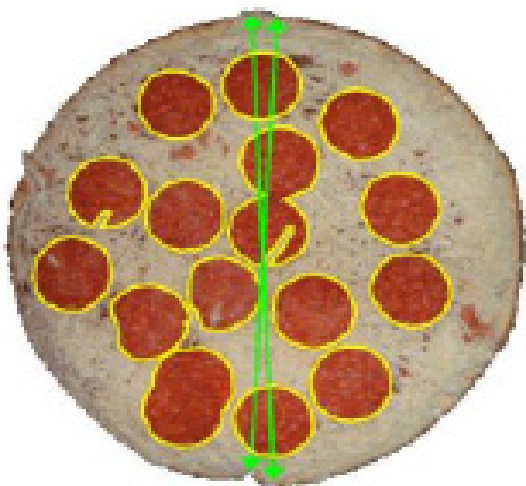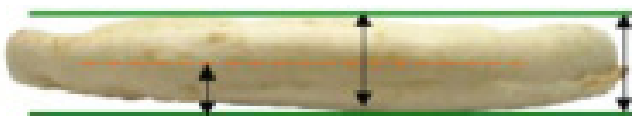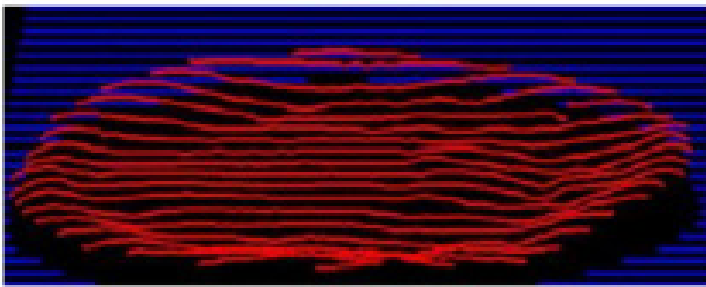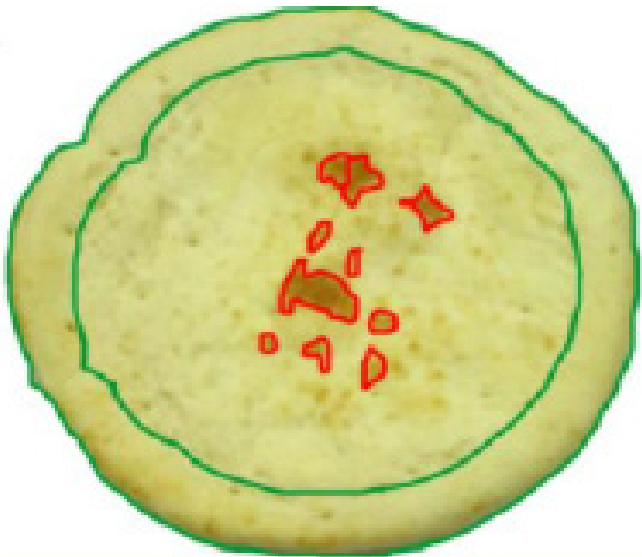
2D / Color Measurements

The system measures every product and inspects each crust for visible defects. These include:

Surface Area: The total surface area of the crust – a ½″ increase in diameter on an 8″ crust equates to a 12% increase in area that may require proportionate topping to cover.

Minimum/Maximum Diameter: The diameter measurements detect over and under-sized crusts, or roundness characteristics.

Overall Color: The average bake color of the top surface of the crust. Dark marks can be ignored when calculating base product color.

Rim Color: Specific color characteristics of the rim only.
Filling Area Color: Specific color characteristics of the filling area only.

Toast (Dark) Marks area %: The percentage of the top surface covered by dark areas. The darkness level to be isolated is user defined.

Under Baked Areas %: The percentage of the top surface that is under baked (very white).

3D / Thickness Measurements

Peak Height: This measures the highest point on the rim. The peak height will be too high if the crust edges are too high; conversely will detect if expected high measurements are absent.

Filling Area Height: The average height of the dough surface in a user-defined center spot of the crust is a measure of dough thickness. Height trends can be monitored in real time to ensure consistent dough thickness
.
Height Variations: Heights can be monitored from the outside edge to the center of the crust to monitor thickness abnormalities.

Volume: Crust volume can be calculated directly.

Filling Area Evenness or Flatness: The height variation of all points is calculated in a defined area.

Average Rim Height: The average height of the rim only.