

Automated Inspection & Intelligent Material Handling for Cookies



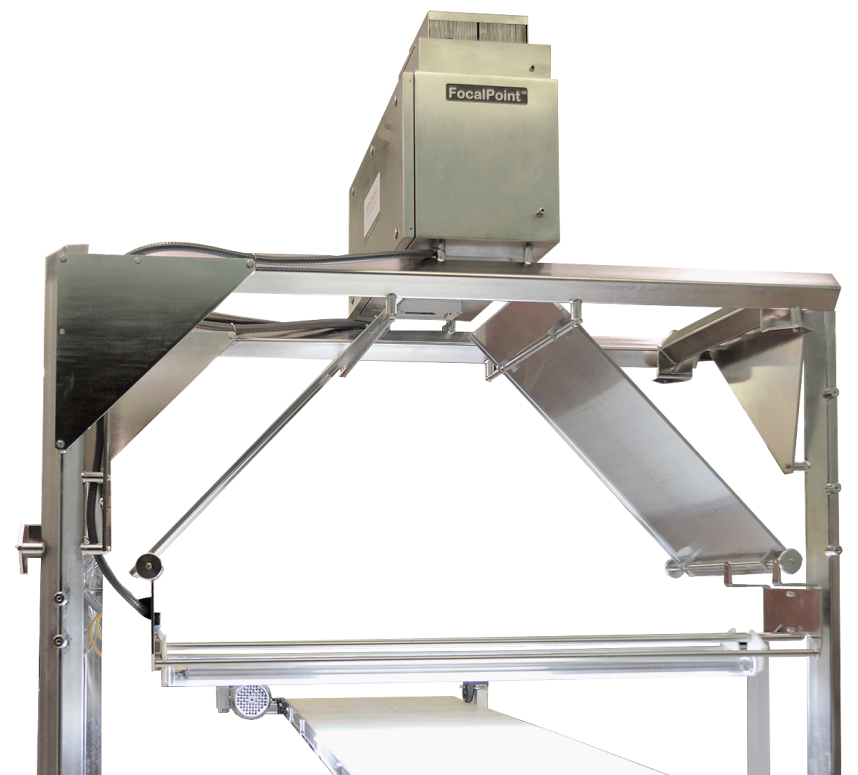
www.montrose-tech.com

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

A high speed, turnkey system that allows you

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. Rapidly recognize a positive ROI by improving quality, reducing waste, and automating production - in previously labor-intensive areas.

Solution Components	SnapQC	FocalPoint	MT Series
3D & True Color Inspection	✓	✓	✓
Bottom Color Inspection	✓		✓
Automated Rejection			✓
Weight	✓		
Statistical Analysis and Reporting	✓	✓	✓
Nema 4X		✓	✓
Sanitary Design	✓	✓	✓



FocalPoint above-line Inspection System for Cookies

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 Bowed	Product Rejection	0-100% fully under plant control	Worst Fault Pareto
	Ovality Doubles	Customer Complaints		Reporting
	Misshaped Warped	Handling Problems (jamming at packaging)		Dashboard
Color Analysis (Top and Bottom)	Under/over- baked Visible Debris	Consumer Complaints	0-100% fully under plant control	Worst Fault Pareto
	Foreign material Dark area	Product Rejection		Reporting
	Burnt area	Process Optimization		Dashboard

Measure, Analyze, Reject

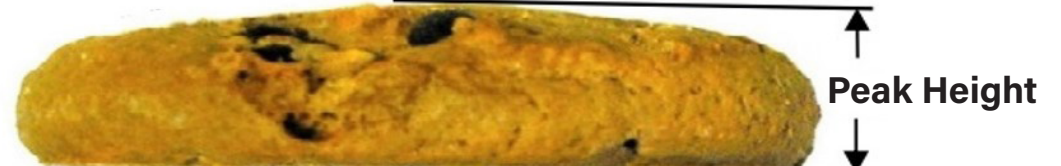
The **MT Series inspection system** uses 3-D vision to identify a wide range of cookie defects, including those dimensional defects that can cause disruptions with penny stacking and packaging. The automatic removal of the defective cookie(s) will reduce product waste, reduce production interruptions, and increase productivity.

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Height Analysis



Profile height calculations are based on hundreds of individual height values gathered on every product, which leads to a measurement accuracy of $\pm 0.5\text{mm}$. **Percentile Height** and **Center Height** are other common measurements applied to cookies.

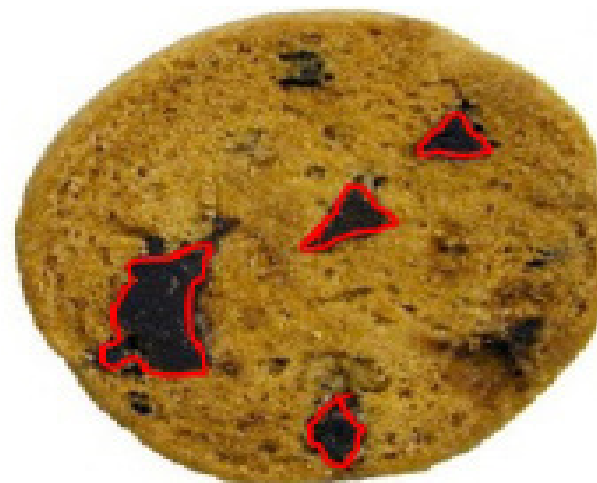
2D Analysis



Two dimensional calculations are based on an accurately defined perimeter, which is imaged by both overhead cameras. 2-D measurement accuracy is $\pm 0.5\text{mm}$. **Roundness**, **Surface Area**, and **Volume** are other common measurements applied to cookies.

Color Analysis

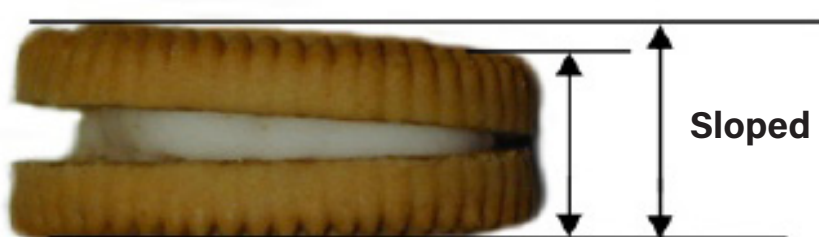
Average Color
(Excluding choc chips, raisins, etc.)



Chip Count

True color calculations are measured in various units such as $L^*a^*b^*$ and BCU, which **quantify small variations of bake**

Common Fault Analysis



Misshaped



Too Few Gems Broken

Only common examples have been pictured. There are many standard measurements that can be used, individually or combined within formulae, to qualify your product. **All visible product characteristics and faults can be quantified.**