

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

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



Solution Components	FocalPoint	MT Series
Inspection	X	X
Bottom Color Inspection		X
Automated Rejection		X
Color Imaging	X	X
Statistical Analysis and Reporting	X	X
NEMA 4X	X	X
3A Dairy Sanitary Design		X

> 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 lane, 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	Chipped corner/edge	Product rejection	0 - 100% fully under plant control	SPC Analysis On-line
	Too long or short	Customer complaints		Reporting
	Too wide or thin	Handling problems, such as jamming at packaging		Worst fault Pareto
Color Analysis (Top and Bottom)	Small jam deposit	Consumer complaints and safety	0 - 100% fully under plant control	SPC Analysis On-line
	Broken	Product rejection		Reporting
	Jam filling leaker	Product rejection		Worst fault Pareto
	Poor icing coverage	Topping giveaway		
	Under- or over-baked			
Visible debris				
Foreign material				
Too little topping				
Cracked				

> Measure, Analyze, Reject - by Lane

The **MT Series inspection system** software displays real-time measurement data in graphic formats that make it easy to identify what fault relates to the largest cause of rejection, and in what across belt lane(s) position those same faults occur. Montrose software also has the capability to perform 100% rejection for individual lanes, for those temporary situations where marginal toaster pastries need to be removed from the production line.

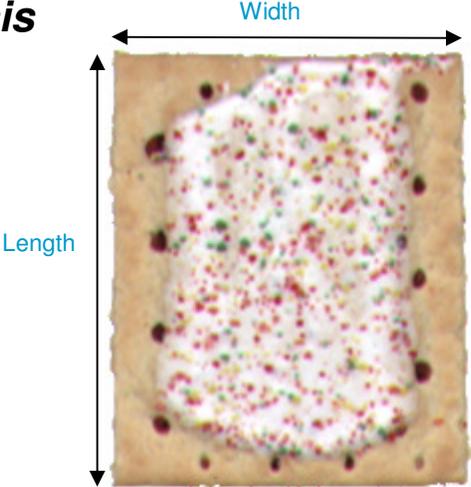
The **Montrose color analysis software** is programmed for the necessary detailed examination of the various colored components of a toaster pastry, so that all attributes and defects are accurately quantified.

> **Common Height Analysis**



Profile height calculations are based on hundreds of individual height values gathered on every product, which leads to a measurement accuracy of $\pm 0.5\text{mm}$. **Mean Height** is another common measurement applied to toaster pastries.

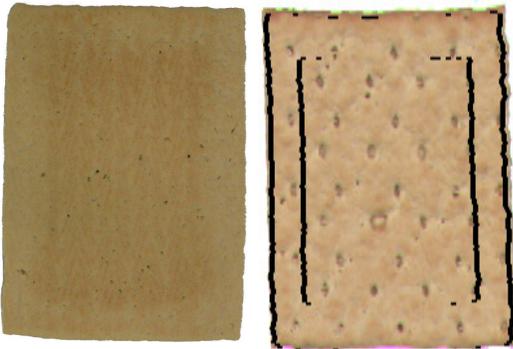
> **Common 2-D Analysis**



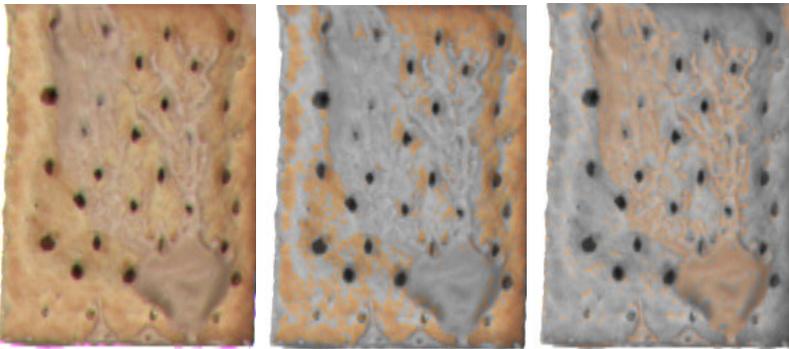
Two dimensional calculations are based on an accurately defined perimeter, which is imaged by both overhead cameras. 2-D measurement accuracy is $\pm 0.5\text{mm}$. **Surface Area**, and **Volume** are other common measurements applied to toaster pastries.

> **Common Color Analysis**

Bottom Bake Color
(average of all pixels) **Top Bake Color**
(average of all pixels)



Even though the coloured pastry components can be very similar, Color Analysis allows for the **distinction** between the frosting, crust, additional topping, and filling.



Original Image Filtered Image for the Crust Only (frosting converted to gray scale) Filtered Image for the Frosting Only (crust converted to gray scale)

True color calculations, on both the top and bottom surface of the product, are measured in various units such as dbu, L, and HSB.

> Common Fault Analysis



Broken
(white area within perimeter)



Misshaped
(width or length too large)



Chipped Corner or Edge
(missing perimeter area as compared to a rectangular template)



Cracked
(filtered color blob analysis)



Poor Frost Coverage
(within central region, small surface area of frosting color, or large surface area of exposed crust color)



Poor Deposit
(within central region, large surface area of a reduced height - blob analysis)



Too Thick
(large peak height; usually due to extra dough or dough fold)



Bottom Leaker
(surface area of exposed filling color)



Top Leaker
(surface area of exposed filling color, excluding breather holes)

Only some common examples have been pictured. Carbon on bottom, too much frosting, too little/too much additional topping, and excessive wicking are other common defects that can be quantified. There are more than 100 standard measurements that can be used, individually or combined within formulae, to qualify your product. **All visible product characteristics and faults can be quantified.**