Automated Inspection & Intelligent Material Handling for Croissants

MONTROSE Technologies Inc.

www.montrose-tech.com

Montrose inspection and handling systems provide a complete inspection, rejection, and handling solution created for croissant 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

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 round croissants 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	SnapQC	FocalPoint	MT Series	AutoLaner
3D & True Color Inspection	☑	☑	☑	
Bottom Color Inspection	☑		☑	
Automated Rejection			☑	
Laning and Entrance to Packaging				☑
In-line Accumulation/ Buffering			☑	☑
Weight	☑			
Statistical Analysis and Reporting	☑	☑	☑	
Nema 4X		☑	☑	☑

MT-50 In-line Inspection Systems for Croissants

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 Too tall or short	Product rejection	0-100% fully under plant control	Worst Fault Pareto
	Shape Doubles	Customer complaints		Reporting
	Poor symmetry/join	Handling problems (jamming at the slicer/bagger)		Dashboard
Color Analysis (Top and Bottom)	Under/over- baked Visible Debris	Consumer Complaints	0-100% fully under plant control	Worst Fault Pareto
	Too light Too dark	Product rejection		Reporting
	Foreign material			Dashboard

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 croissants into the slicer, with the removal of oversized product, belt speed changes, diversion, and/or lane balancing.

Automated Inspection & Intelligent Material Handling for Croissants
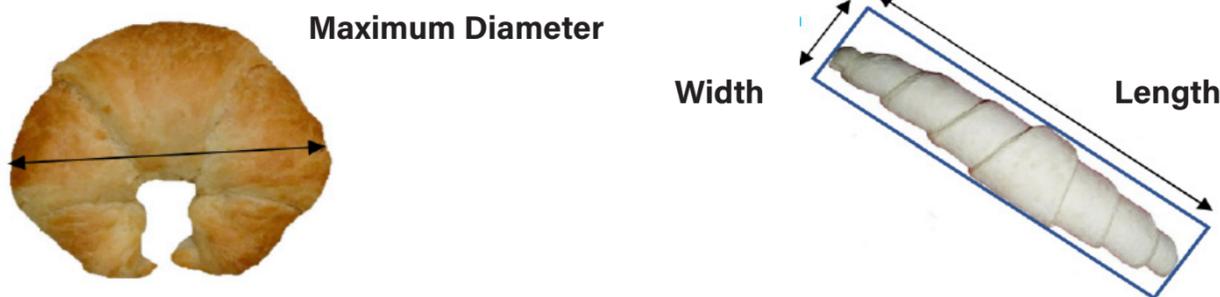
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Height Analysis

Slope

Peak Height
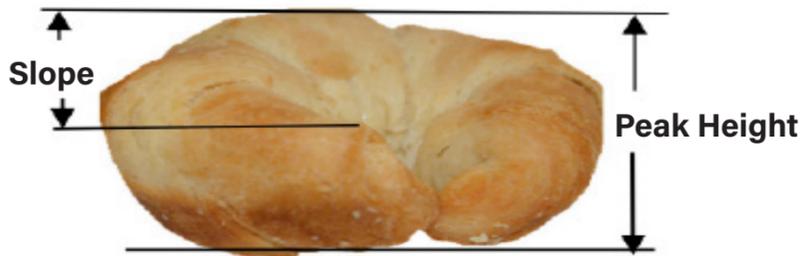
Profile height calculations are based on hundreds of individual height values gathered on every product, which leads to a measurement accuracy of ±0.5mm. **Mean Height** is another common measurement applied to croissants.

2D Analysis

Maximum Diameter

Width

Length

Two dimensional calculations are based on an accurately defined perimeter, which is imaged by both overhead cameras.

2-D measurement accuracy is ±0.5mm. **Mean Diameter, Roundness, Surface Area, and Volume** are other common measurements applied to croissants.

Color Analysis

Top Average Color
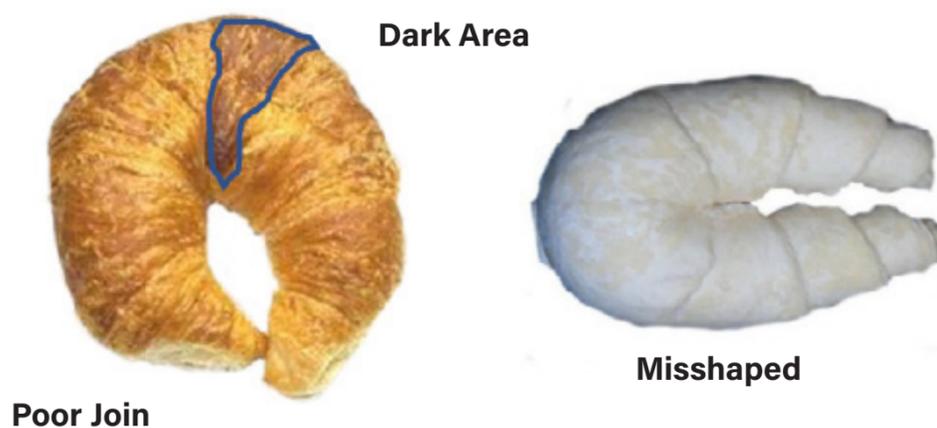(Excluding Additive

Bottom Average Color

True color calculations, on both the top and bottom surface of the product, are measured in various units such as L*a*b* and BCU.

Common Fault Analysis

Dark Area

Poor Join

Misshaped

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.**