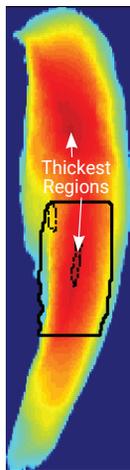




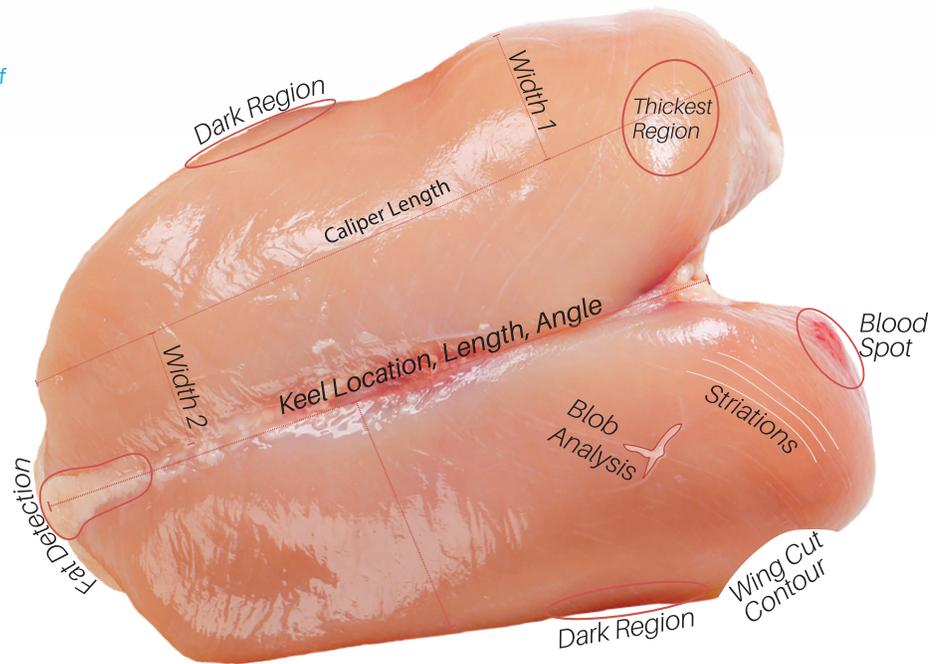
Raw Poultry

APPLICATION BRIEF

The manufacture of poultry involves many variables that can impact consistency and quality. The ability to monitor key product attributes using vision inspection systems, and real-time inspection software, configured with user-defined parameters, allows you to identify and respond to production issues quickly and effectively.



Height Map of Raw Chicken Strip



KPM Analytics Vision Software was designed to interface directly to the data generated by your at-line, benchtop, in-line or over line vision system, providing instant, graphical data and easy access to historical production information based on raw object or minute data.

Having instant and easy access to production and QA data allows you to make time-sensitive decisions to ensure the most efficient operation, improve quality, and reduce costs.

Daily Report
Tuesday, January 08, 2019 08:00 - Wednesday, January 09, 2019 08:00
Chicken Company - Chicken Plant

| Site Name | Site Number | Report ID | Physical Rejects | | | | | | | | | | | | |
|-----------------|-------------|-----------|------------------|--------|------|------|-------|------|------|-------|------|------|-----------|-----------|-------|
| | | | Total Objects | | | | | | | | | | | | |
| Attribute | L | U | Temp | USL | URL | mean | S.D. | min | max | range | Cp | Cpk | Below USL | Above URL | Total |
| Length (mm) | 88 | 115 | 142 | 105.61 | 8.75 | 96.0 | 144.7 | 87.8 | 148 | 60.2 | 0.80 | 0.30 | 0 | 0 | 0 |
| Peak Height (g) | 49 | 55 | 52 | 54.24 | 5.29 | 4.0 | 63.0 | 48.0 | 63.0 | 15.0 | 0.80 | 0.30 | 0 | 0 | 0 |
| Thickness (mm) | 18 | 22 | 28 | 21.75 | 3.28 | 12.0 | 28.0 | 16.0 | 40.0 | 28.0 | 0.80 | 0.30 | 0 | 0 | 0 |
| Width (mm) | 22 | 30 | 34 | 28.88 | 4.03 | 21.0 | 34.0 | 22.0 | 42.0 | 21.0 | 0.80 | 0.30 | 0 | 0 | 0 |

Virtually any food product can be measured using KPM Vision Inspection imaging technology, either directly during the production process (Over-Line / In-Line) or using a Benchtop Inspection System (Off-Line).

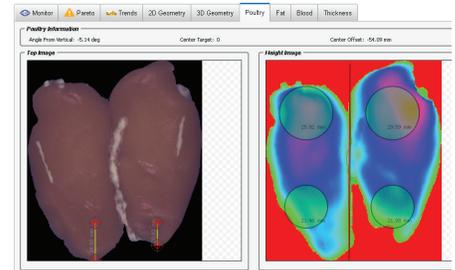
Below are some of the measurements available specific to raw poultry.

OVERHEAD 2D ANALYSIS

| | |
|-------------------------------------|---|
| Caliper Length | The length of the object as measured down the center of the long axis. |
| Dual Caliper Width | The summation of the longest widths of the object as measured perpendicular to the Caliper Length. |
| Keel Location, Length, Angle | The positioning of the keel relative to the caliper length of the object including the keel length and angle at which the keel intersects the line defining the Caliper Length of the object. |
| Surface Area | The total surface area of the object (mm ² or in ²) that can be compared to minimum and maximum limits for portion control. |
| Blob Analysis | The percentage of the surface area with color anomalies (i.e. blood spots, dark meat, or PAA discoloration). |
| Wing Cut | The length and width of a contour defect resulting from excess paring during separation of cuts. |
| Product Color | The average color of the product across the surface area. |
| Fat % Area | The percentage area of the object that is fat-colored (i.e. white). |
| Striation Values | The quantity of striation lines and percentage of the object's surface area covered by striation. |

HEIGHT 3D ANALYSIS

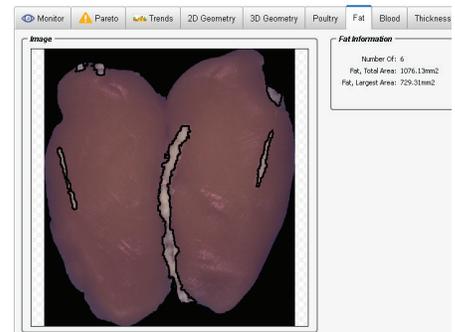
| | |
|--|--|
| Min, Max, Avg, & Adaptive Thickness | The lowest, highest, average and filtered height of the object when resting on a flat surface; calculated by taking the average of the 'N' highest height points measured on the top surface (N is user-configurable). |
| Volume & Weight | The calculated volume of the object as determined by the surface area and mean height. Can be used with average density entered into the system to derive predicted weight. |
| Slopes | The curvature of the top surface on the product; measured by calculating the vertical change between the thickest region and the tail of the keel. |



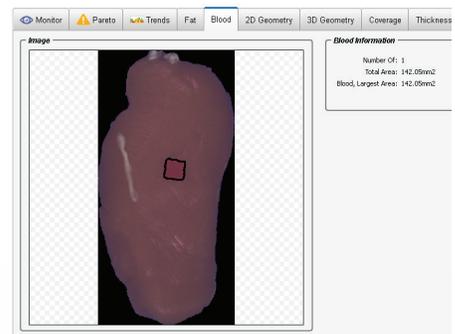
Smart Thickness



2D Measurements



Fat Area Analysis



Blood Spot Detection