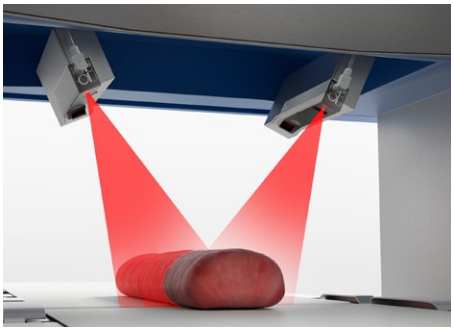
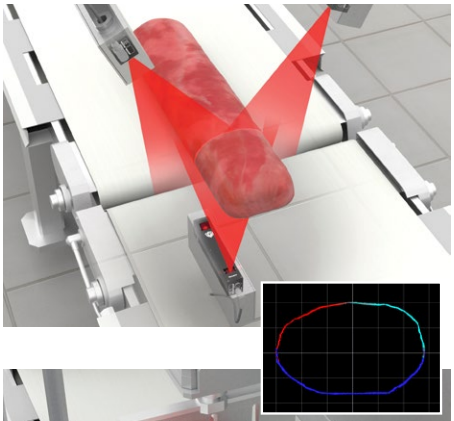
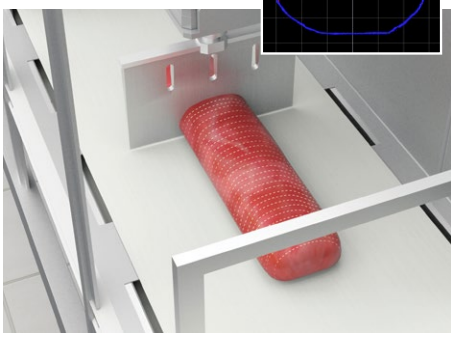
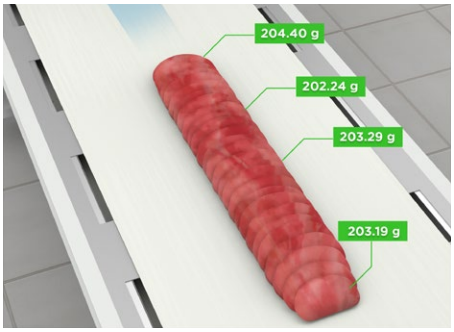
INDUSTRY APPLICATION:
AUTOMATED PROTEIN PORTIONING









Challenge

Many scanning applications in the food industry require accurate volume measurement for irregular shaped objects in order to determine optimal portioning. This requires capturing 360° shape data for the target object.

The Gocator® Solution

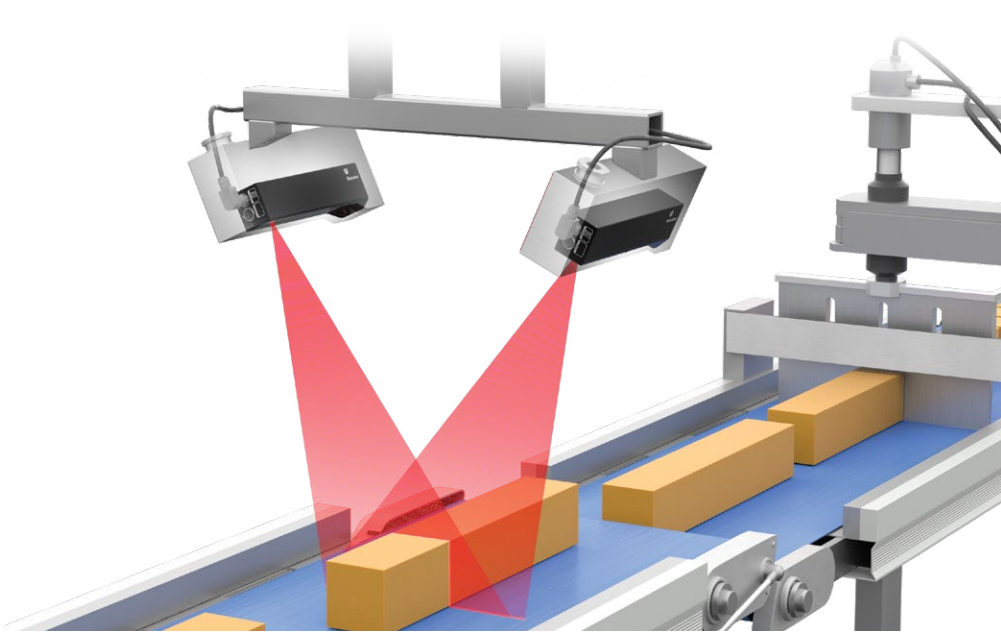
To perform 360° scanning, Gocator® 3D smart sensors support multi-sensor ring layouts. In this approach, the sensors are positioned around the object to capture its entire circumference. As the object moves through the sensor ring, data is "stitched" into a complete 3D model to derive accurate volume measurement.

Protein portioning is an example of an application that requires this type of layout.

The Implementation

A slab of protein (e.g., meat, cheese) moves through a ring of 3D laser line profile sensors. All scans are used to calculate accurate cross-sectional area. Combining the areas provides you with the volume of the protein slab.

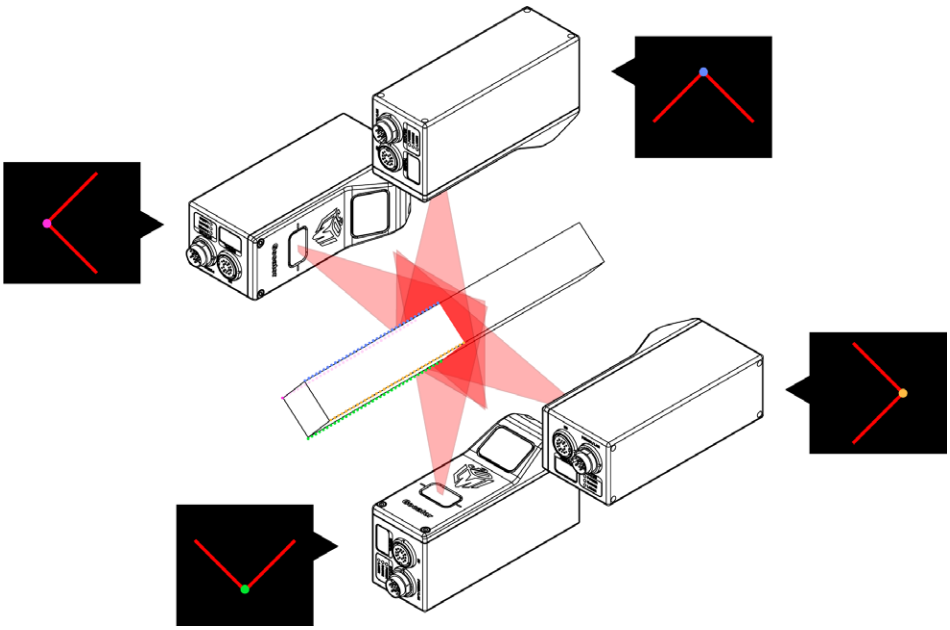
To cut the slab into smaller portions with a specified target weight, the engineer simply has to multiply the volume data by the average density of the protein, then set the cutter to activate upon reaching the threshold weight value.



Aligning to a Common Coordinate System

In order to support multi-sensor ring layouts, all sensors in the network must be aligned to a common coordinate system. This is accomplished by introducing a known shape (like a 4-sided polygon) into the scan plane. Each sensor "sees" one of the vertices of the polygon. Gocator® can then calculate each sensor's position and transform sensor coordinates into a common coordinate system. This transformation is carried out automatically for every 3D point produced by the sensor.

The transformed data from the sensors forms a 3D point cloud. This point cloud requires processing to calculate measurements such as cross-sectional area. Scripting can be used to accumulate areas, calculate volumes, and trigger downstream control decisions to activate cutters upon reaching target weight thresholds.



Sensor alignment using a four-sided polygon, with four sensors looking at each vertex.

Conclusion

Ring layouts are fully supported in Gocator®, including alignment and cross-sectional area measurement to build a smart portioning sensor out-of-the-box.

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