



# Bulk Parcel Counter

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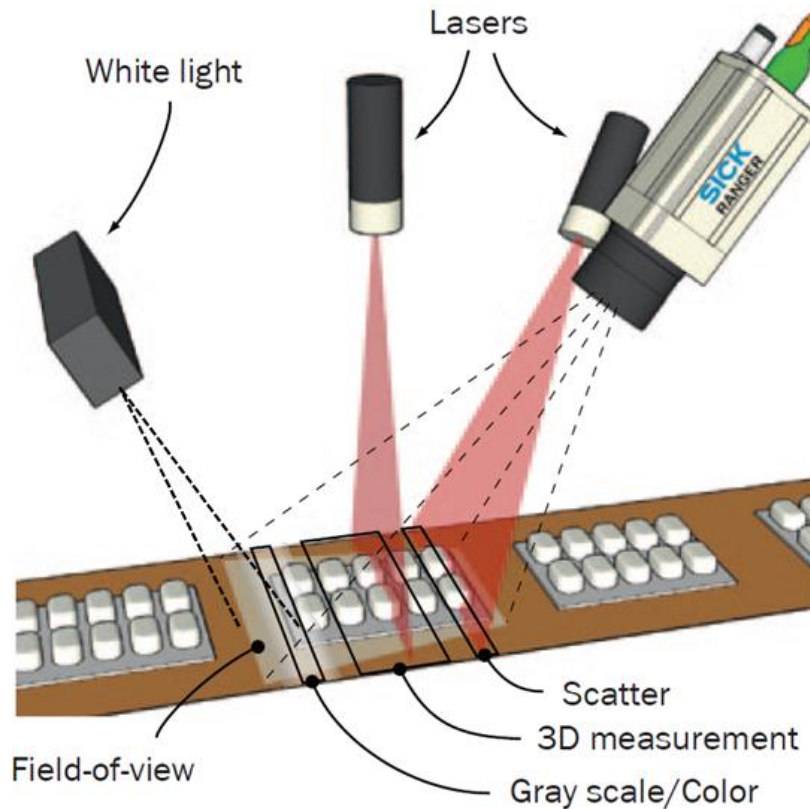
# Bulk Parcel Counting & Flow Control

## Executive Summary

- : Customers often desire the ability to control package flow into singulators and sorters to prevent too much instantaneous volume from overwhelming the automation and creating recirculation.
- : POSTIS offers several solutions to analyze the incoming package flow and report conditions back to the singulator/sorter controls system.
- : The success of each strategy is strongly dependent on the bulk flow profile and mail-mix
- : This presentation was created to help customers better understand:
  - High-level theory-of-operation for each approach
  - A statistical analysis of the prototype performance of each approach
  - Factors in deciding which solution is a best fit for the application

# Theory of Operation

- : Integration of COTS, 3-D smart camera utilizing the full array of measurement features (3D, RGB color, contrast, and laser scatter), which are tuned independently
- : Multiple, simultaneous measurements are configured and interpreted (using POSTIS algorithms) to optimize the solution to the application requirements
- : White-light and lasers provide profiled contrast for the camera to interpret



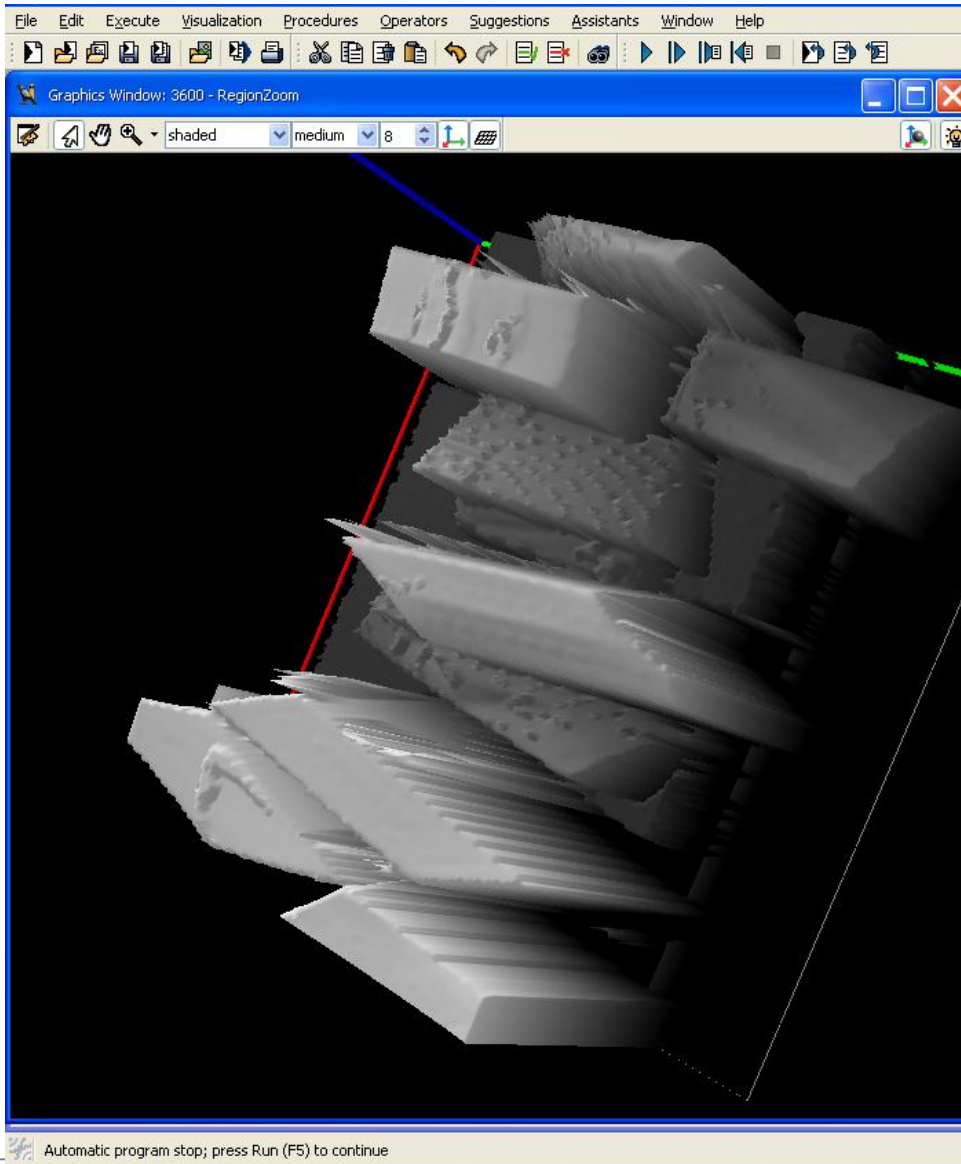
# Theory of Operation (con't)

## Test Run # 1 - Photograph



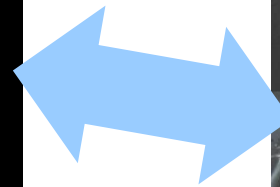
# Theory of Operation (con't)

## Test Run # 1 - 3-D View



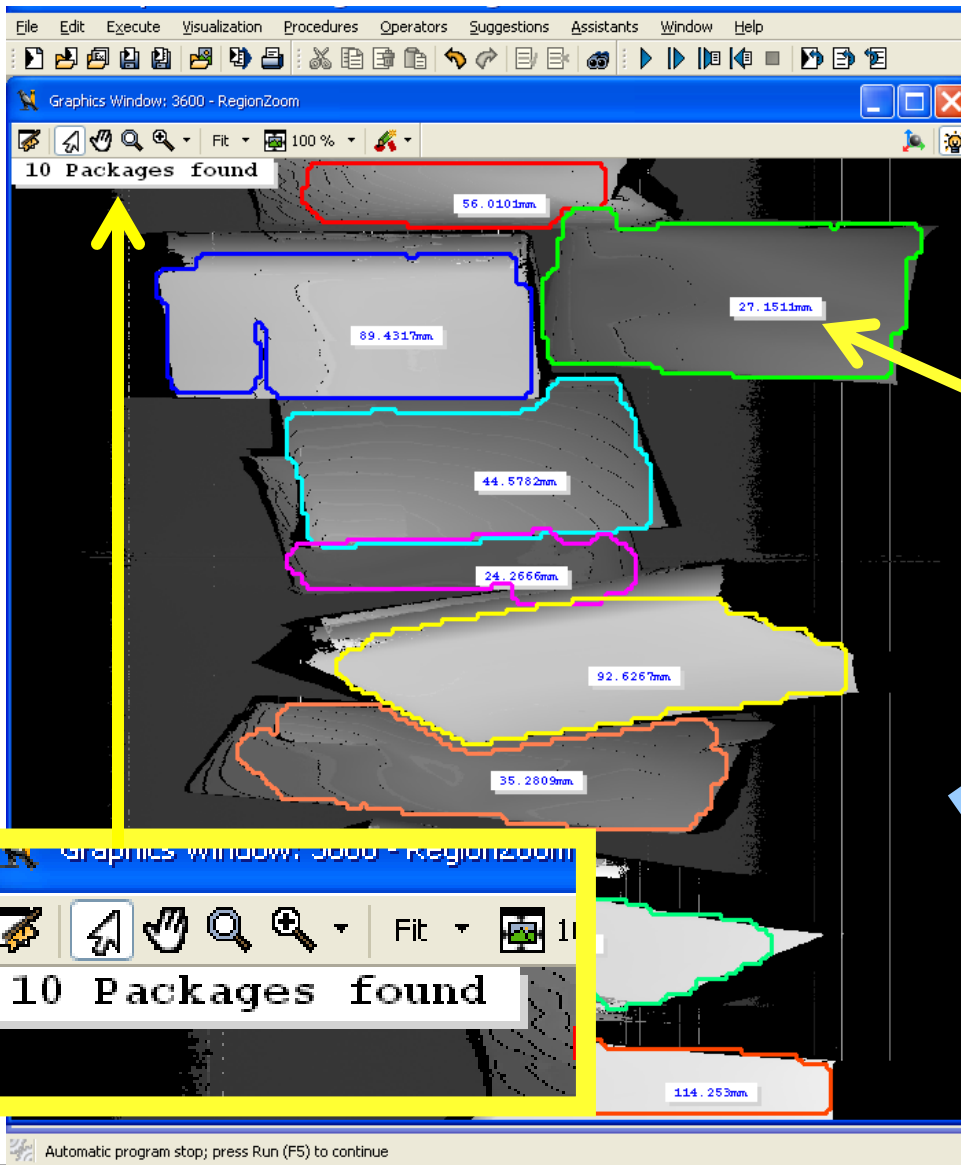
### 3-D View

- Gives ability to distinguish packages within pile and ability to analyze pile by planar height

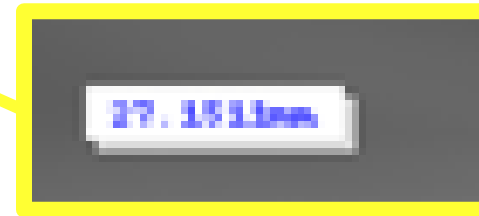


# Theory of Operation (con't)

## Test Run # 1 - Image with Item-Detection Outlines



Item determination outlines -  
*Generated by POSTIS Vision Algorithms*



Package data  
(height, length,  
width)



# Theory of Operation (con't)

## Test Run # 1 - Statistical Performance

Run	Scenario	# of Packages in Bulk Flow	# of Packages Detected	System Accuracy	Testing Notes
1	See picture	11	10	91%	Very complex



# Volume Testing (Customer Managed Test)



T/P: 3000pph

Actual: 50 parcels

Measured: 49 parcels

Small Piles



T/P: 6000pph

Actual: 44 parcels

Measured: 47 parcels

Thin Boxes and  
Envelopes

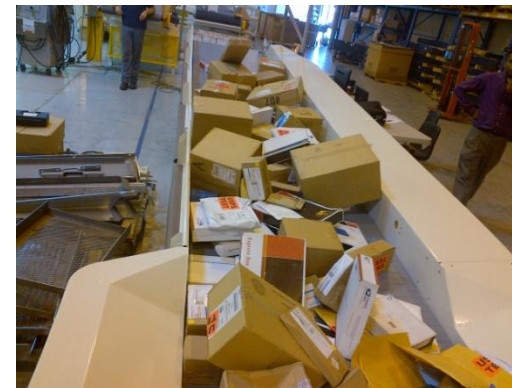


T/P: 6000pph

Actual: 58 parcels

Measured: 58 parcels

Large Boxes



T/P: 12,000pph

Actual: 100 parcels

Measured: 99 parcels

Large Piles



# 3-D Bulk Parcel Counting & Flow Control

## Performance Indicating Observations

- : The 3-D camera-based solution does extremely well counting packages in a bulk flow, including thins, parcels, and a mix
- : The 3-D camera-based solution captures “virtual frames”, to provide the host (conveyor controls) with either qualitative or quantitative information on the volume of parcel on the conveyor
- : System can be mounted over existing conveyor
- : We can integrated in into existing system controls

- : Singulator Control
  - Used as a measurement of flow feeding a Singulator, the feed material handling controls can be automated to provide the optimized flow into the Singulator
    - Too few product and the Singulator is starved
    - Too much product and the Singulator efficiency is reduced
- : This system can eliminate labor or enable an automated dumping and feed system



**Thank you for your attention**