

Quality Policy

Subject Data

# All Surfaces Inspection

## The Advent of Tablet automated Visual Inspection System

Superior cost performance, thanks to further improvements to our popular Tablet Visual Inspection System (TVIS), implementing new concepts

High-precision Inspection

Cost

Operability  
Easy Cleaning  
Features

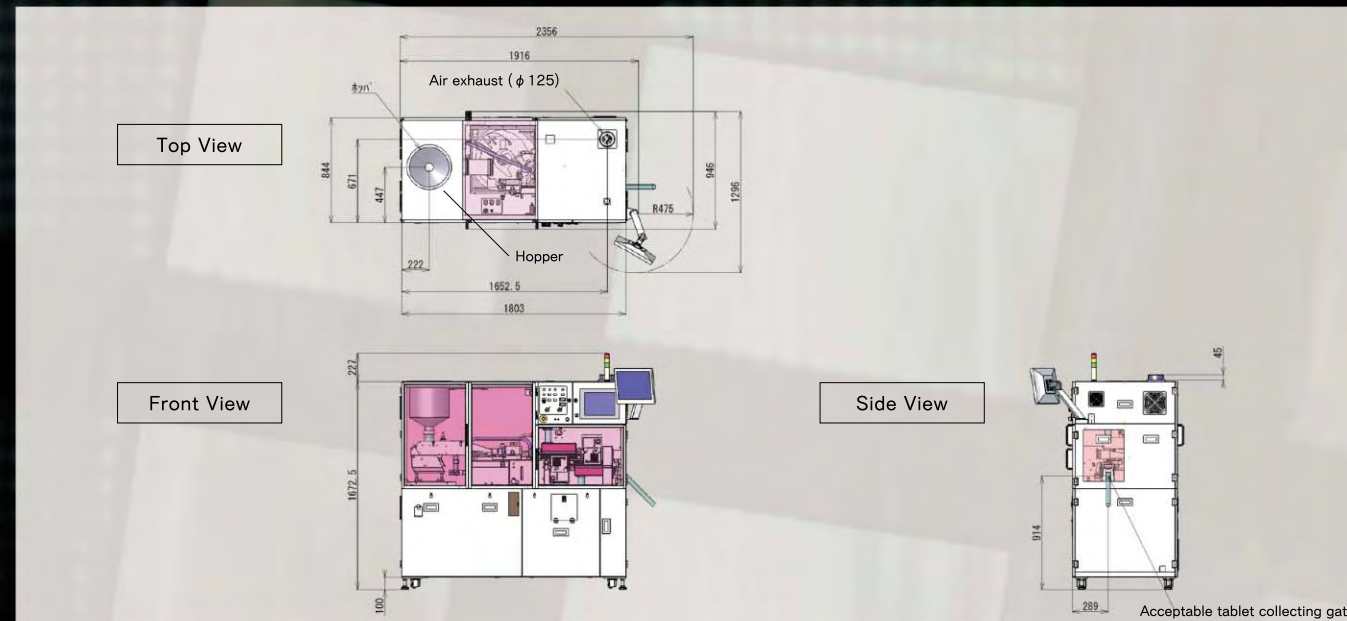
Processing Capacity

Conveyor Technology

Lighting Technology

Image Processing Technology

System Dimensions



Standard Specifications Model: TVIS-AS-C6

Item	Specifications		
Inspection functions	Applicable tablets	Non-coated, film-coated, sugar-coated tablets; tablets with printing or scoring on one or both sides; scored tablets; tablets with engraved mark; circular tablets; non-circular tablets (triangular, rectangular, leaf-shaped and oblong tablets)	
	Tablet size	Circular tablets : 5-12 mm in diameter and 2-8 mm in thickness Non-circular tablets : 5-12 mm in width, 2-8 mm in thickness, 5-21 mm in length For non-standard size, please consult us.	
	Inspected items	Dirt inspection : Foreign particle, Dirt, Surface nicks	
		Shape inspection : Dimensions, Presence of cracks or deformation	
		Chip inspection : Chipped edges	
	Inspected surfaces	Face, back and sides	
Inspection precision	Defects equivalent to a 100 μm square or larger black speck		
Processing capacity	Circular tablets : 1,200-2,200 tablets/min		
	Non-circular tablets : 500-1,800 tablets/min Depends on tablet size and shape		
Hardware	Inspection Subsystem	Lighting unit	2 LED units
		Camera	CCD color line sensor camera X2
		Communication	Touch panel (Microsoft Windows XPe)
	Transfer subsystem	Judgment processing unit	Microcomputer, High-speed processor, Signal processing board
		Hopper	Capacity : 25 0
		Vibratory feeder	Transfer capacity : 5,000 tablets/min maximum
		Flow-control turntable	φ : 498, t : 0.5, rotation speed : 0-60 rpm
	Rejection subsystem	Conveyor unit	Suction belt conveyor system (transfer, 1st conveyor, 2nd conveyor)
		Rejector unit	Pneumatic
		Defective tablet collection box	Capacity : 15 0
Software	Uninspected tablet collection box	Capacity : 5 0	
	Pneumatic unit	Suction blower for the suction belt conveyor system : 0.9 kW, suction blower for powder collection : 0.75 kW	
Size & Environment	Inspection functions	Individual and overall judgments, inspection condition entry, result output	
	Diagnostic functions	Monitoring of inspection status, monitoring of hardware, self-diagnosis	
	Dimensions	W 1,803 mm X D 844 mm X H 1,673 mm (excluding annunciator lamp)	
	Power supply	200 VAC (3phase), 50/60 Hz, rated current : 30 A, rated sensitivity current : 30 mA, power consumption : 4.0 Kw	
	Pressure of pneumatic unit	0.35-1.00 MPa, flow rate : 25 0/min. maximum, tube diameter : φ 8	
	Ambient conditions	Temperature : 10-30°C, humidity : 30-70% (non-condensing)	
Exhaust airflow	11m <sup>3</sup> /min. maximum		
Exterior	Stainless steel		

※End user must provide Primary power supply, pneumatic supply and printer. Please consult us for details.  
※Specifications and external appearance are subject to change without prior notice.

**THE Elizabeth COMPANIES**

Elizabeth Carbide Die Co. Inc.  
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McKeesport, PA 15132  
Phone: (412)751-3000  
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*Or contact your local Elizabeth sales agent directly*

※The data of this brochure is as of February 2007.

## Tablet automated Visual Inspection System TVIS-AS-C6



Hunt Down the Defects

**viswill**  
DAIICHI JITSUGYO VISWILL CO., LTD.

# Tablet automated Visual Inspection System

TVIS-AS-C6

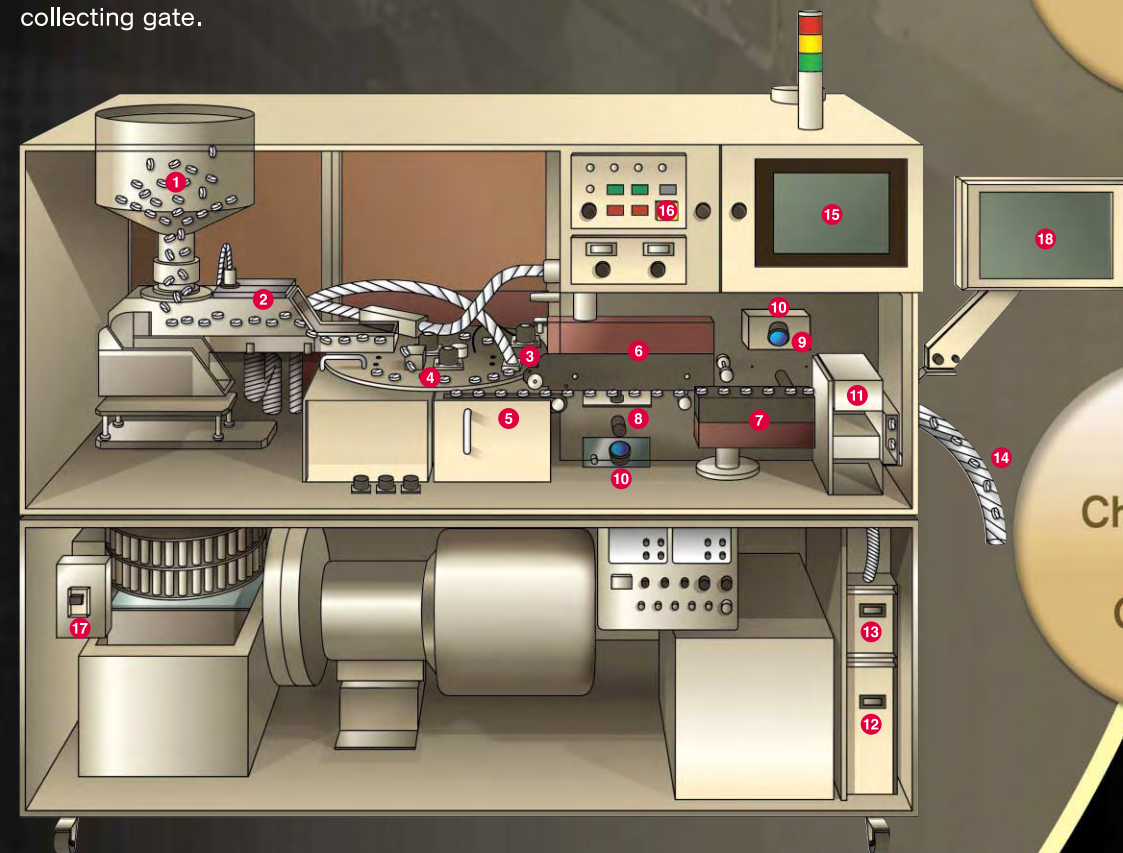
## System Outline

Tablets fed to the hopper are transferred to the flow-control turntable in appropriate amounts by the vibratory feeder. The tablets are lined up by several guides and transferred from the transfer subsystem to the conveyor and inspection subsystems at an optimum pitch.

Tablets fed to the inspection subsystem successively pass through the lighting units installed on the conveyor unit and images of their faces, backs and sides are picked up by the CCD line sensor cameras.

The images are processed to obtain various data and individual tablets are judged acceptable or defective according to our unique inspection algorithm.

When a substandard tablet is encountered, the image processing subsystem sends a rejection command to the rejection subsystem, discharging defective tablets into the defective tablet collection box pneumatically. Acceptable tablets are fed directly to the accepted tablet collecting gate.



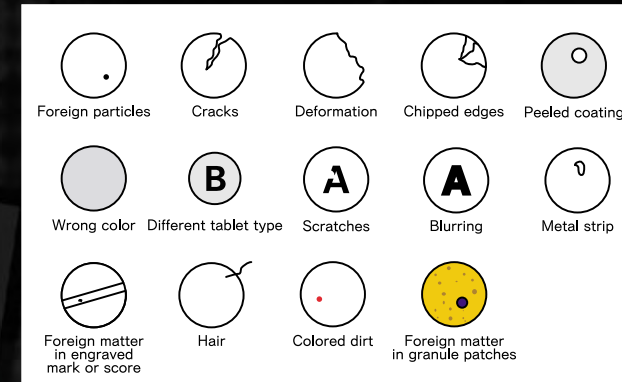
- 1 Hopper
- 2 Vibratory feeder
- 3 Flow-control turntable
- 4 Height/Width guide unit
- 5 Transfer unit
- 6 1st belt conveyor unit
- 7 2nd belt conveyor unit
- 8 Face-1 lighting unit
- 9 Face-2 lighting unit
- 10 CCD color line sensor camera
- 11 Rejector unit
- 12 Defective tablet collection box
- 13 Uninspected tablet collection box
- 14 Acceptable tablet collection hose
- 15 Touch panel
- 16 Operation panel
- 17 Breaker
- 18 Image monitor

## Inspection Precision

**Handles a wide range of tablet types**  
Applicable shapes include round, triangular and other shapes (certain special tablet shapes can be optionally added).  
Tablets with engraved marks, scoring and printing, and those with component granules or granule patches appearing on the surface can also be inspected.



**High-precision inspection**  
The color cameras in combination with advanced lighting technology and state-of-the-art image processing technology yields reliable detection of defects equivalent to a 100 μm square or larger black speck.  
Printing defects, colored dirt, foreign matter in component granules or granule patches can also be detected with high precision, thanks to our unique inspection algorithm. (The degree of detection depends on the results of our sample evaluation.)

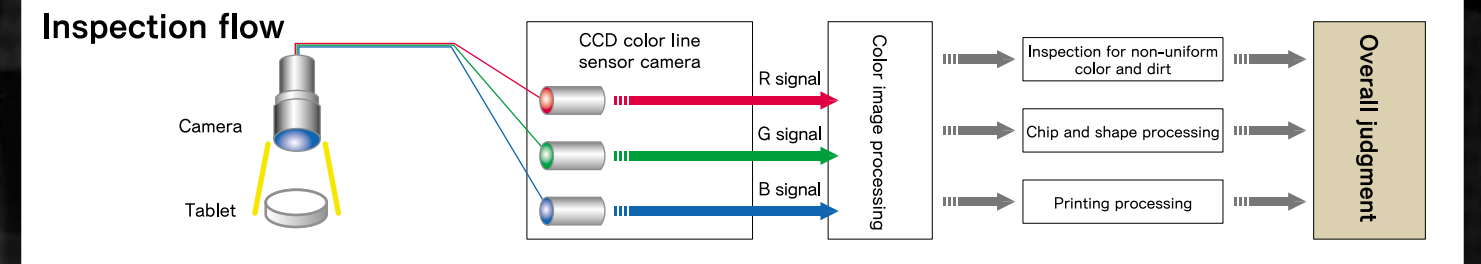


**Suitable illumination for inspecting engraved marks**  
The standard lighting unit ideal for inspecting dirt, foreign matter, printing and deformation can be replaced with that suitable for engraved marks as option, enabling the system to detect wrong marks.

## Processing Capacity

# Comparable Inspection Technology to Human Eyes. Pursuit of Quality and Efficiency.

Although this is a simple concept, we strive to provide a high-performance inspection system to replace human eyes and judgment, making product quality assurance easy and saving energy in demanding production system scenarios.

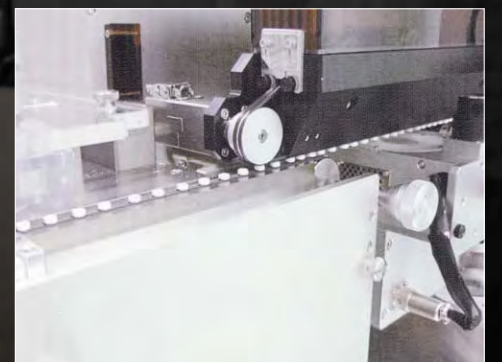


## Superior conveyor technology

This system employs a suction belt conveyor subsystem, just as is used in our proven medical tablet inspection system. Our conveyor subsystem ensures stable high-speed transport without faltering, a critical technology for high-precision inspection. Tablets will not be chipped or cracked by this system, due to sensitive flow control provided by the turntable.

## High processing capacity and continuous operation

Stable processing capacity of about 100 thousand tablets per hour is possible with this system (depending on tablet size and shape). Error monitoring functions (pressure fluctuation, light intensity fluctuation and tablet conveyance conditions) are implemented and the system can be operated unattended during the night by constructing a continuous operation system, in combination with our optional feeder and distributor.



## Easy Changeover and Cleaning

### Easy lot changing

Respective subsystems can be detached and reattached without tools, requiring only about 15 minutes for all subsystems (not including cleaning time). Minimal replacement parts are needed when changing lots, such as the punched plate for rough rejection, providing superior cost performance even in multiple-model small-lot production scenarios. By entering inspection condition (inspection sensitivity) for particular types in advance, production can be immediately started by reading out the product type after completion of the conveyor setting.



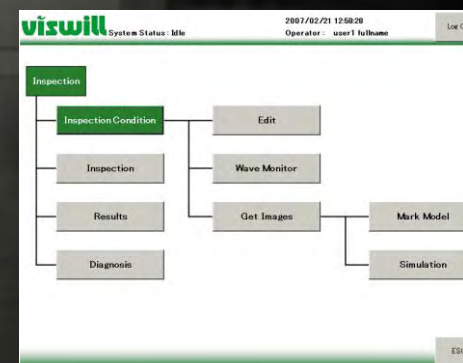
### Superior ease of cleaning

Special materials and surface processing are employed for parts coming into contact with tablets, in accordance with the Food Sanitation Law, and these parts are easily washable. The system is designed for easy visibility, to prevent contamination and facilitate confirmation of remaining tablets after the completion of a production lot.

## Operability

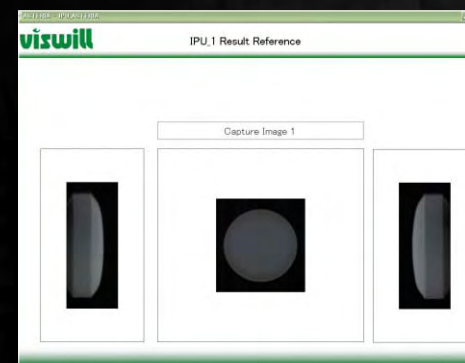
### Operator-friendly screen display

A color touch panel is provided to facilitate operation via the display. The interactive system prevents improper operation by operators during daily operation, and streamlines entry of new tablet data.



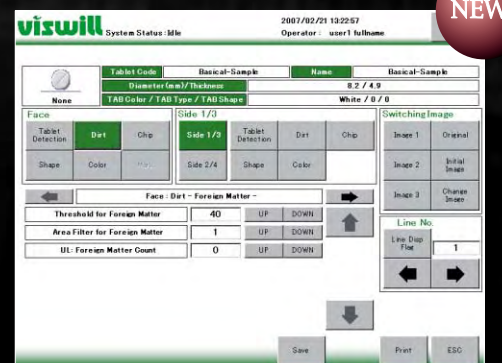
### Real-time display

During inspection, the display shows updated inspection conditions (total number of inspected tablets, number of defective tablets according to causes, and processing capacity) in real time. Changes in processing capacity and defect ratio are displayed graphically.



### Easy entry and adjustment of parameters

The entry and adjustment of parameter settings are dramatically simplified thanks to a simulation mode for calculating defective ratio under various conditions as well as feedback regarding the features and detailed data of defective tablets.



NEW!