

# Advantech GigE Vision Solution

- GigE Vision offload Engine
- PoE power from PCIe slot (Total Max. 18W)
- Free SDK to develop and deploy

- ✓ PCI Express form factor
- ✓ GigE Vision Support
- ✓ PoE Support



**ADVANTECH**

*Enabling an Intelligent Planet*

**ala** VISION  
ONLINE  
GLOBAL ASSOCIATION FOR VISION INFORMATION

member of  
**emva**  
european machine vision association

[www.advantech.com](http://www.advantech.com)

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### Taiwan

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### Netherlands

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# ADVANTECH

Enabling an Intelligent Planet

[www.advantech.com](http://www.advantech.com)

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## Frame Grabbers

NEW



NEW



NEW



NEW



Model Name		PCI-E-1172	PCI-E-1174	PCI-E-1672E	PCI-E-1674E
Power Requirements	Input Voltage	12 V <sub>DC</sub> direct from PCIe slot, total Max. 18W or AT/ATX system power input			
	Overload Current Protection	Present			
	Connection	AT/ATX Power Jack			
	Output PoE Power	48 V <sub>DC</sub> PoE Power output, total Max. 18W (total Max. 60W with AT/ATX system power input)			
Environment	Operating Temperature	0 ~ 50°C (32 ~ 122°F)			
	Storage Temperature	-20 ~ 80°C (-4 ~ 176°F)			
	Operating Humidity	5 ~ 95% RH			
Mechanics	Dimensions (W x D)	185 x 110 mm (7.3" x 3.9")			
GigE Vision	Compatibility	IEEE802.3af			
	Speed	1000 Mbps		10/100/1000 Mbps	
	No. of Ports	2	4	2	4
	Port Connector	8-pin RJ45			
	Bus Interface	PCI Express® x 4			
	Jumbo Frame	9KB			
	GigE Vision Offload Engine	✓	✓	-	-
Safety	ESD	8KV (air), 4KV (contact)			
	EFT	2 KV			
	Surge Protection	1 KV			
	Isolation Protection	2.5 KV			
Digital Input/Output	No. of Channels	2 input and output	4 input and output	-	-
	Input/Output range	0-30V opto-isolated			
	Max. frequency	1KHz			
	Digital input interrupt	Falling and rising edge, normal and invert			

## Computing Platforms



Model Name		UNO-3283G	MIC-7500 + MIC-75M40	AIMC-3421
System Hardware	CPU	Intel Core i7-6822EQ	Intel Core i7-6822EQ/i5-6442EQ/i3-6110EQ	Intel Core i7-4790S/i5-4590S/i3-4360
	Memory	Built-in 8GB memory	Built-in 4GB memory, update to 32GB	Max. 16GB
	Graphic	Intel® HD Graphics 100 series	Intel® HD Graphics 530	Intel® HD Graphics 4600
	Expansion Slot	1 x PCIe x 16, 1 x PCI, 2 x mPCIe	1 x PCIe x 16, 1 x PCIe x 4	1 x PCIe x 16, 1 x PCIe x 4, 1 x PCI
	Storage	CFast: support 2 x CFast slots	HDD: support 1 x 2.5" HDD CFast: support 1 x CFast slot SSD: 1 x internal mSATA (Mini-PCIe interface)	HDD: support 1 x 3.5" HDD
I/O Interface	Display	1 x DVI-I, 1 x HDMI	1 x VGA, 1 x DVI	1 x VGA
	USB	6 x USB 3.0	8 x USB 3.0, 1 x USB 2.0 (internal)	4 x USB 2.0 compliant (2 in front, 1 in rear, 1 internal)
	Serial	RS-232/422/485 x 2	RS-232/422/485 x 2	RS-232 x 2
	Audio	1 x Line-Out, 1 x Mic-in	1 x Line-Out, 1 x Mic-in	PS/2: 1
Environment	Operating Temperature	-10 ~ 60°C	-20 ~ 60°C with 0.7m/s air flow and SSD	0 ~ 40°C
	Vibration	3 Grms @ 5 ~ 500 Hz, random, 1 hr/axis	3 Grms @ 5 ~ 500 Hz, random, 1 hr/axis	1 Grms @ 5 ~ 500 Hz, random, 1 hr/axis, 3 axes
General	Dimensions (W x H x D)	142 x 177 x 238 mm	119 x 192 x 230 mm	150 x 222 x 270 mm

# Key Features of Machine Vision Solution



## Reliability

- Dedicated coprocessor for network traffic, image acquisition
- No frame and packet loss



## GigE Vision Support

- GigE Vision compliant
- Reduce CPU workload



## Easy to Use

- ToE/PoE single cable solution to reduce installation and maintenance time



## Shorten development time

- Provide viewer utility and .NET Component SDK
- GeniCam and GenTL compatible, support for MVTec HALCON, Stemmer Imaging CVB

## Frame Grabber Bundle Solution

### Modularized



- Modularized expansion chassis
- Versatile I/O interface

### Rugged

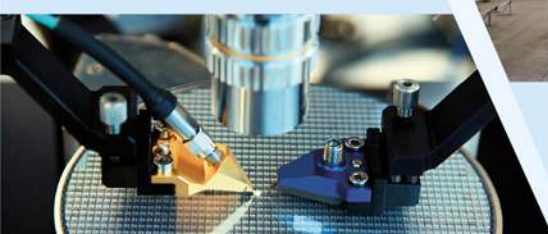


- Designed for harsh environment
- Front accessible I/O interface and storage

### High Performance

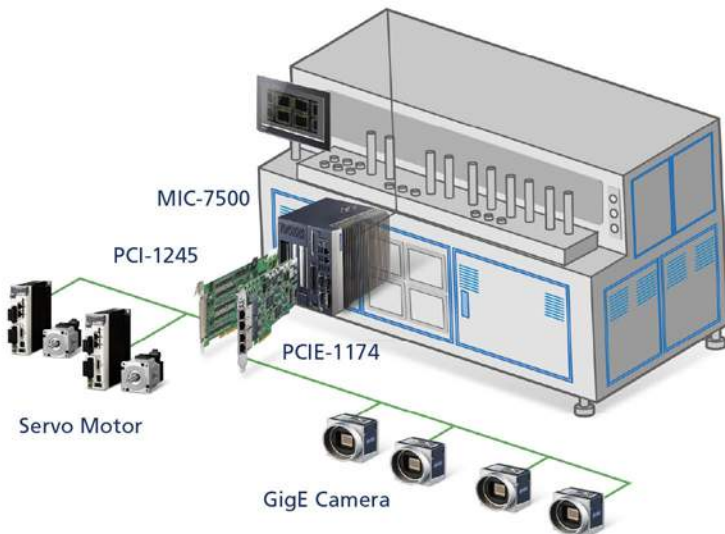


- High price performance ratio
- State-of-art graphics performance





## Increasing productivity of backend semiconductor packaging inspection machines



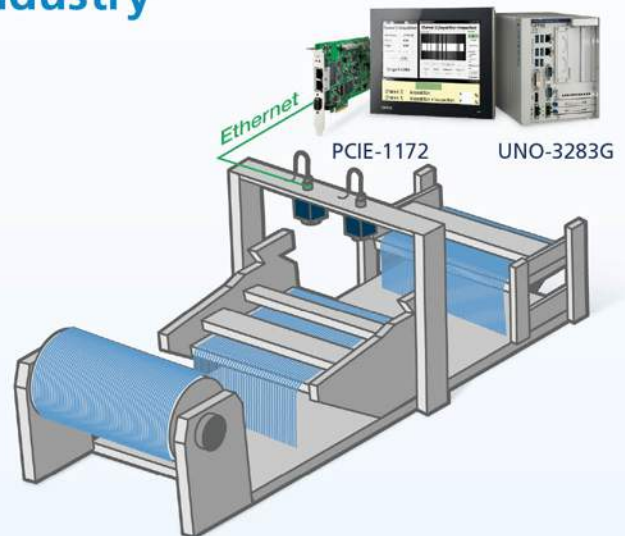
The semiconductor industry has some of the most demanding applications, requiring a combination of extreme accuracy and precision combined with high throughput. Keeping up with innovations in packaging, the challenges to achieve this drastically increase. The fast-paced progress towards greater densities and finer dimensions are pushing the limits of vision systems. Advantech suggested an intelligent GigE Vision frame grabber, DSP-based multi-axis motion control card and compact modularized system for direct integration in space-constrained machine to accomplish high-precision, high productivity IC packaging inspection. The solution adopts an industrial grade computer to combine PCI-E-1174, four-channel intelligent GigE Vision frame grabber with include a dedicated FPGA (Field Programmable Gate Array) to reconstruct images before transmitting them in real time to the host PC via DMA (Direct Memory Access). This then frees up the host PC's processor and ensures there is no frame or packet loss during image acquisition.

Model Name	Description
PCI-E-1174	4-port PCI Express Intelligent GigE Vision Frame Grabber
PCI-1245	DSP-based 4-axis Stepping and Servo Motor Control Universal PCI Card
PCI-1756	64-ch Isolated Digital I/O PCI Card
MIC-7500 + MIC-75M13	Intel 6th Generation Core i Processor Compact System; i-Module with 1x PCIe16, 3x PCI slots
FPM-7211W	21.5" Full HD Industrial Monitor with PCT Touch, Direct-VGA and DVI Ports

## Improve fabric quality in textile industry

Textile manufacturing is a very complex process. Weaving is the most basic process which involves interlacing a set of vertical threads (called the warp) with a set of horizontal threads (called the weft).

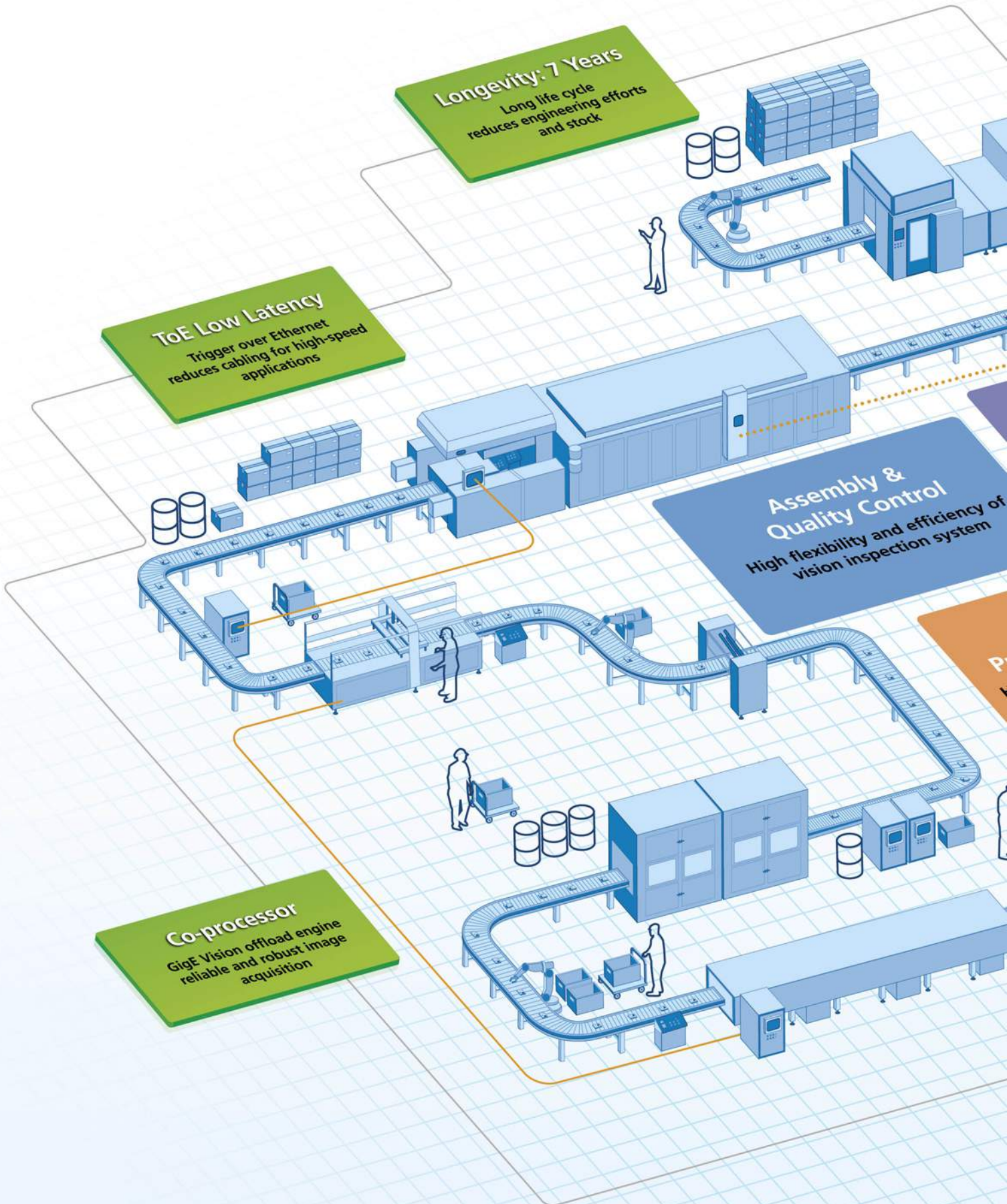
The new optical web inspection system can detect the warp thread break less one second and ease of use and maintenance. Accordingly, Advantech suggested the UNO-3283G, an Intel i7 Fanless Automation Computer with 2 x GbE, 2 x mPCIe, HDMI, DVI-I, and PCI-E-1172, two channel intelligent GigE Vision frame grabber with include a dedicated FPGA (Field Programmable Gate Array) to reconstruct images before transmitting them in real time to the host PC via DMA (Direct Memory Access). This then frees up the host PC's processor and ensures there is no frame or packet loss during image acquisition. To further aid installation and maintenance, this series also includes the use of PoE(Power over Ethernet) and Ad Hoc protocol which, like DHCP, doesn't require a specific IP address and enables System Integrators (SI) to simply plug the camera in and go.



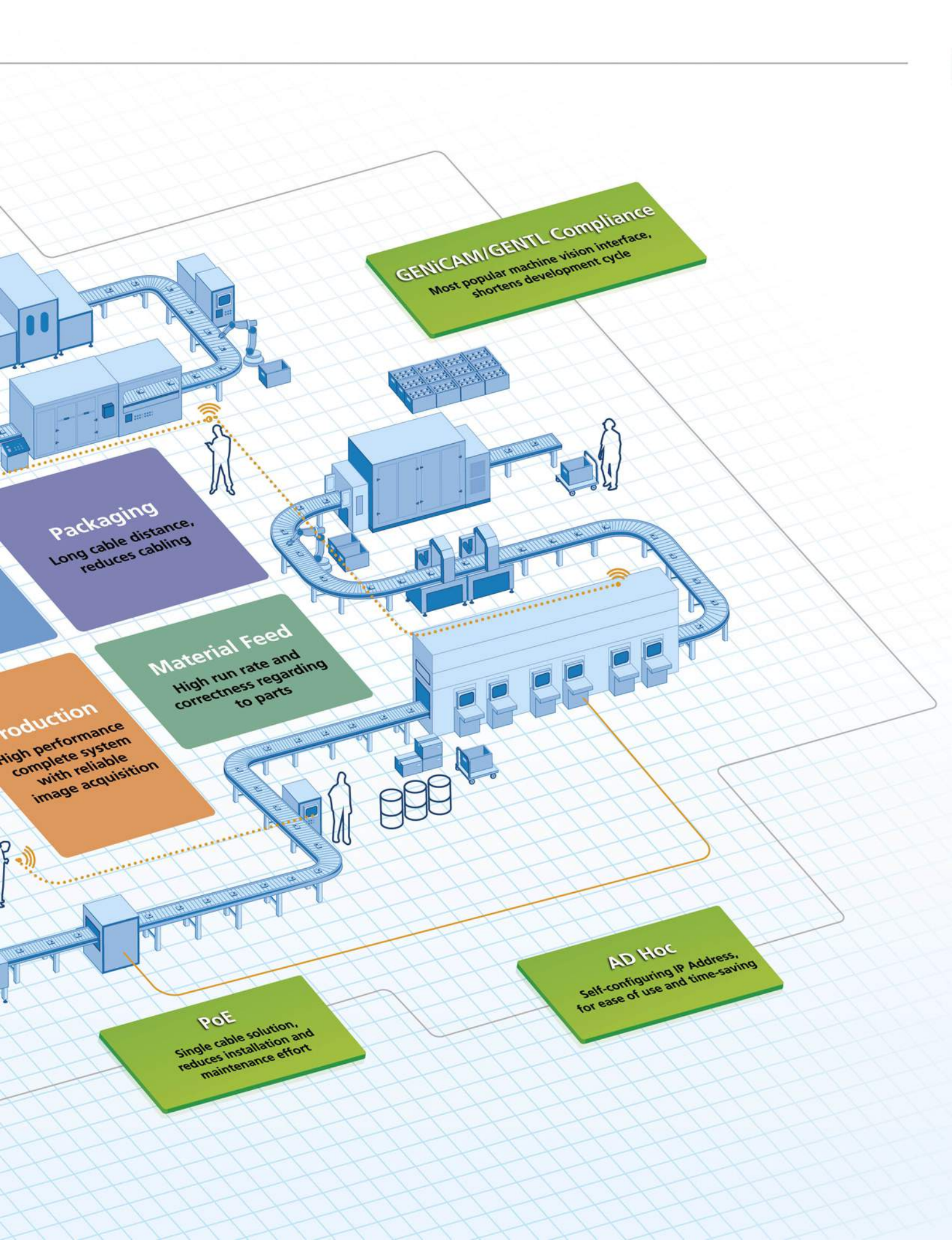
Model Name	Description
PCI-E-1172	2-port PCI Express Intelligent GigE Vision Frame Grabber
UNO-3283G	Intel i7 Fanless Automation Computer with 2 x GbE, 2 x mPCIe, HDMI, DVI-I
FPM-7151T	15" XGA Industrial Monitor with Resistive Touchscreen, Direct-VGA/DP and Wide Operating Temperature Range



# Ethernet-based Machine Vision Solutions for Smart Factories







**GENICAM/GENTL Compliance**  
Most popular machine vision interface,  
shortens development cycle

**Packaging**  
Long cable distance,  
reduces cabling

**Material Feed**  
High run rate and  
correctness regarding  
to parts

**Production**  
High performance system  
complete system  
with reliable  
image acquisition

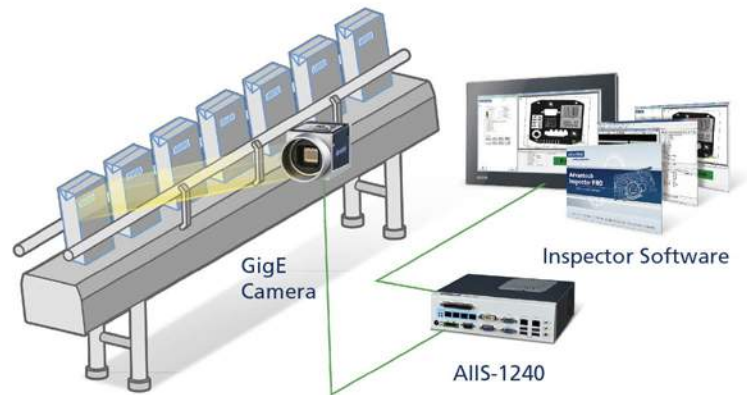
**PoE**  
Single cable solution,  
reduces installation and  
maintenance effort

**AD Hoc**  
Self-configuring IP Address,  
for ease of use and time-saving



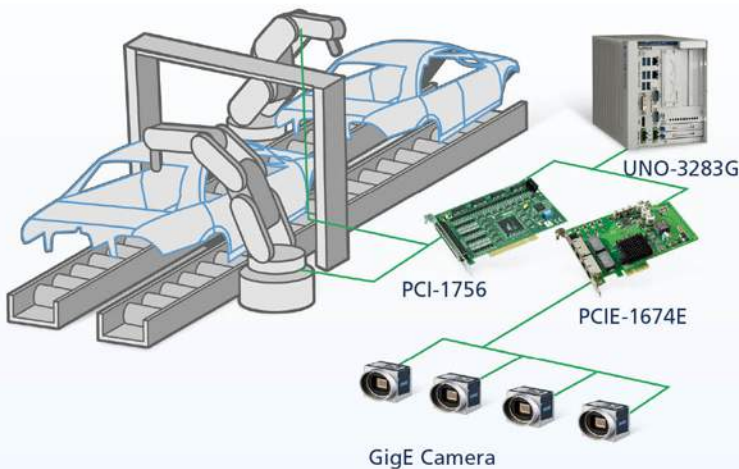
## Implement the product traceability in food & beverage

As the market demand for food safety increases, traceability is getting more attention in the food and beverage industry as well as the packaging industry. One of the world's leading providers of beverage containers would like to identify the bar codes, characters and numbers on the ink-jet printing labels at a 7 unit per second run rate. Advantech provided the multiple camera, PC-based automated optical identification system to identify the bar code, data code, and the character on the beverage container, the system consists of AIIS-1240, 4-CH PoE compact vision system with Intel® Core™ i7 CPU; Inspector Express, a graphical user interface machine vision application software specifically designed to simplify the design and deployment of automated inspection on the factory floor; QCAM-GM0640-120CE, 0.3 Megapixel industrial camera, features with the PoE (Power over Ethernet) to simplify installation and maintenance.



Model Name	Description
AIIS-1240	PoE Compact System, Supports Intel® Core™ i7/i5/i3 CPU, 4-CH GbE PoE
QCAM-GM0640-120CE	640x480 pixel, 120fps, Mono, GigE Vision Industrial Camera
AIN-EX-USBE	Easy User Interface, machine vision application software
FPM-7181W	18.5" WXGA Industrial Monitor with PCT Touch, Direct-VGA and DVI Ports

## Vision system and robotics ensure finished product quality in automotive industry



In the automotive industry, quality control is an extremely important part. Most of time, there are engineers to verify the interiors and exteriors, including dash board, door, seat, light, and color for the finished product quality check. In one of the largest automotive groups, there are about 100 items in the finished product check list and the client was looking for a quality check system to perform the inspection automatically. To automate the quality check of the parts in different vehicles, a flexible and extensible system had to be created, and due to numbers of characteristic, the system integrators designed the AOI (Automated Optics Inspection) system with multiple-camera and robots for high flexibility and efficiency. To satisfy this case, Advantech suggested PCIE-1674E, four channel GigE Vision frame grabber and QCAM-GM2500-014CE, 5.0 Megapixel industrial camera including PoE (Power over Ethernet) function, to simply the installation and maintenance. Besides these, there are other products to help provide the client with the desired functionality. The UNO-3283G, an Intel i7 Fanless Automation Computer with 2 x GbE, 2 x mPCIe, HDMI, DVI-I, and the PC-1756, a 64-ch Isolated Digital I/O PCI Card for digital signal path to provide the total solutions in this case.

Model Name	Description
PCIE-1674E	4-port PCI Express GigE Vision Frame Grabber
QCAM-GM2500-014CE	2592 x 1944 pixel, Mono, GigE Vision Industrial Camera
PCI-1756	64-ch Isolated Digital I/O PCI Card
UNO-3283G	Intel i7 Fanless Automation Computer with 2 x GbE, 2 x mPCIe, HDMI, DVI-I
FPM-7211W	21.5" Full HD Industrial Monitor with PCT Touch, Direct-VGA and DVI Ports