

Company Profile

(주)알티하이텍

 alti hightech

Introduction

Company	(주) 알티하이텍, alti hightech Co., Ltd. (100% subsidiary of "DSK Co., Ltd.", a listed company on KOSDAQ)			
Establishment	JUL. 2007	business product	<Laser System & Sub-System> · Peed Off System · WBG Tape LAMI & Laser Cutting · Large Area Glass Cut · Marking System(IR / GR / UV) · ITO Patterning · Secondary Battery Separator Cutting	<Laser Source> · Solid-state Laser · Gas Laser · Fiber Laser · Semiconductor Laser
Employee	11 Persons (2023/01) / engineer share73%			
Location	3F, 710 Suin-ro, Sangnok-gu, Ansan-si, Gyeonggi-do, Korea			
CEO	TG Kim.	Export Country	China, Vietnam, Malaysia, Poland, Singapore	
Capital	350,000,000KRW	Home Page	www.alti-ht.com	

Major suppliers and performance

- Laser Marker 200 set : Company "LG*" Domestic (Paju, Gumi), China, Vietnam, etc
- Secondary Battery Laser Cutting System 6 line : Company "LG**"
- Peed Off System 4 line : Company "J****", Company "M*****"
- Green Laser, Fiber Laser ... : Performance of supply to many domestic companies

CE certification



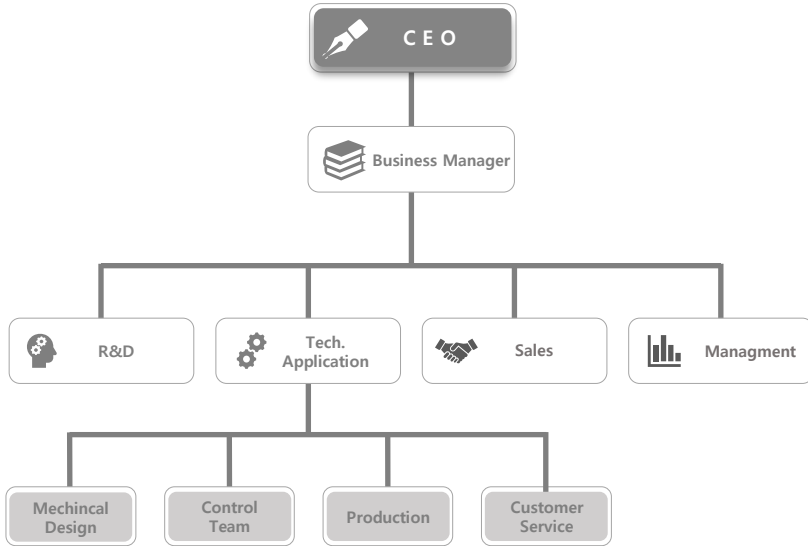
Corporate affiliated research institute



Factory Registration



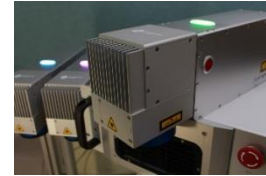
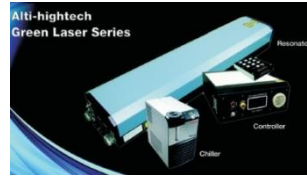
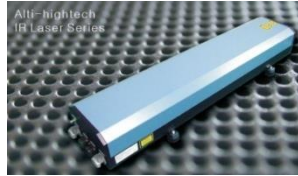
Organization chart and Major History



Alti hightech is founded in 2007 and merged into DSK in 2011 as 100% subsidiary. Alti hightech is a technology oriented company that specializes in Laser related technology, products and businesses from Laser source to variety of laser applications.

Side Pumping IR/Green Laser

- AHT-SS060 Series
- AHT-SS100 Series
- AHT-SS200M
- AHT-SG030 Series
- AHT-SG050 Series
- AHT-SG100M



End Pumping IR/Green Laser

- AHT-SE010T
- AHT-SK005T

Industrial Laser Marking

- High beam quality and stability
- Easy integration and service
- Compact, air-cooled design
- Remote control interfaces
- Optimized performance for your application



FPCB Marking



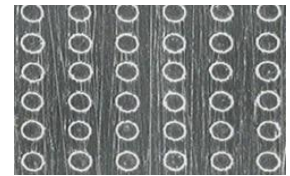
PS Marking



Paper Marking



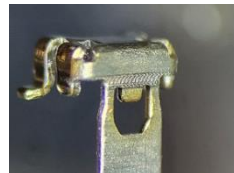
Glass Ink Coating Surface Marking



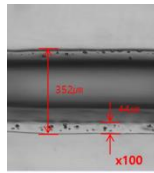
SUS Plate Texturing

Laser System

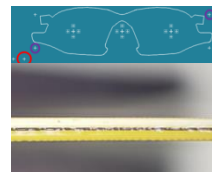
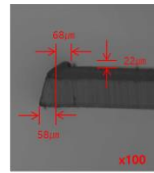
- Peel Off System
- Wafer BG Tape Free LAMI & Laser Cut System
- Large Area Glass Cut(MotF)
- Secondary Battery Separator Cutting(Module)



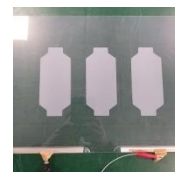
Peel Off System



Wafer BG Tape LAMI & Laser Cut



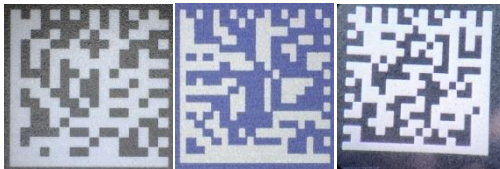
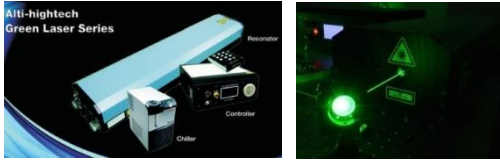
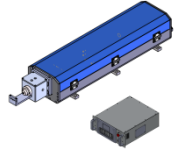
Laser Area Film / Glass Cut



ITO Patterning

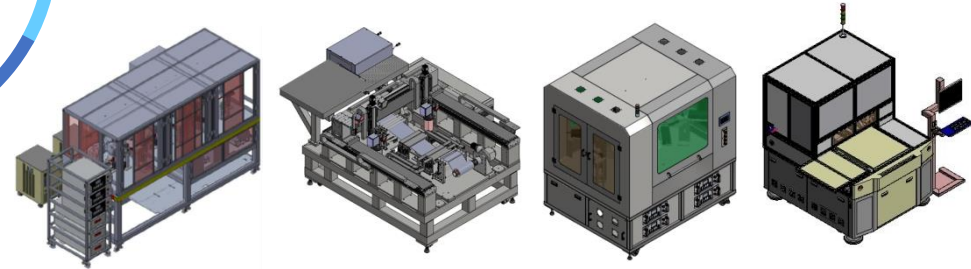
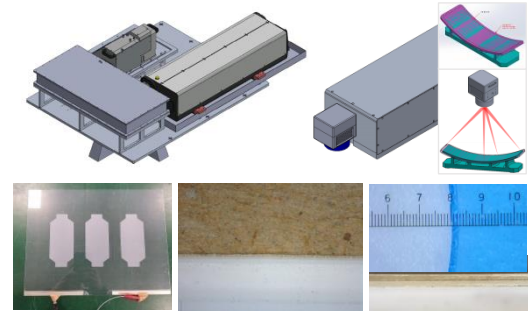
Laser Source & Optical Solutions

- Solid-state Laser
- Gas & Liquid Laser
- Fiber Laser
- Semiconductor Laser



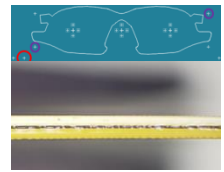
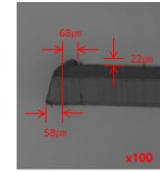
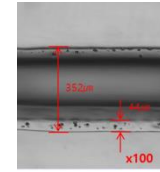
Laser Sub-System / Modules

- ITO Patterning Module
- 3D Film Cutting Module
- Wafer BG Tape Free LAMI & Laser Cutting System
- Marking Module
- Clear Polymer Welding Module



Laser System

- Peel Off System
- Wafer BG Tape Free LAMI & Laser Cutting System
- Large Area Glass Cut (MotF)
- Marking System (IR / GR / UV)

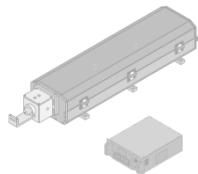


CATALOG

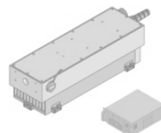
Technology of Alti-hightech

< Product Line -Up>

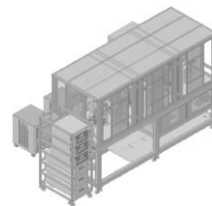
- Peel Off System
- Wafer BG Tape Free LAMI & Laser Cutting System
- Marking System(IR / GR / UV)
- Large Area Film or Glass Cut(MotF)



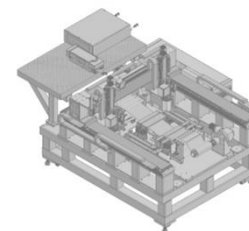
Side Pumped



End Pumped



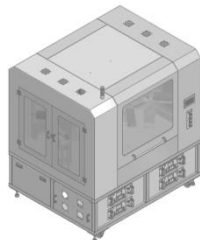
Peel Off System



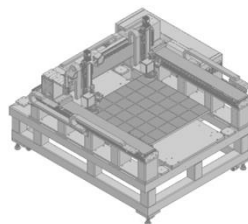
WBG film Free LAMI & Laser Cut System

<Laser Sub-System / Modules>

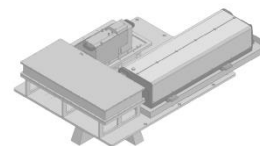
- Secondary Battery Separator Cutting
- ITO Patterning
- 3D Film Cutting
- Marking Module (IR / GR / UV)
- Clear Polymer Welding Module
- Coaxial Vision Module



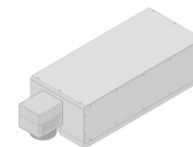
Marking System



Large Area Glass or Film Cut(MotF)

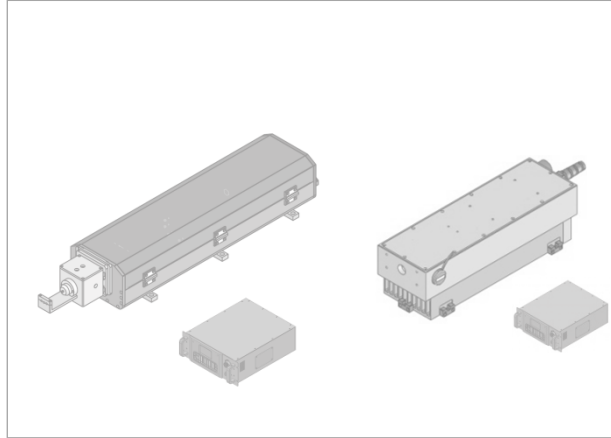


Secondary Battery Separator Cutting Module



Marking Module

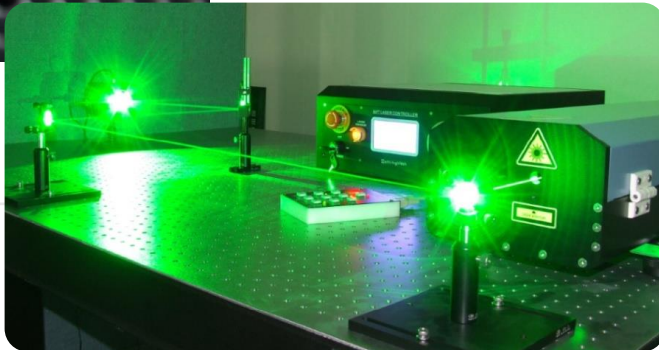
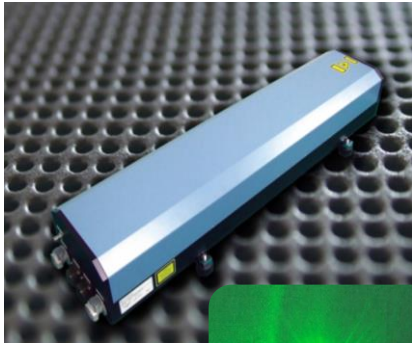
LASER SOURCE



Laser Source(Side Pumped) - Introduction

Laser(IR) Key Specification

- High Pulse Energy → Capable of responding to high power laser applications
- Adjustment function such as Beam Mode and Pulse Energy that can be optimized for application
- IR/GR/UV Wavelength Products → Capable of responding to various output wavelengths
- S/W remote control → Laser Status Monitoring
- 24/7 operation possible by securing Long Term stability



Technical Data	Industrial DPSS Laser / Solid-State, Side Pumped Laser		
Model	SPL-SS060x-01	SPL-SS100x-01	SPL-SS200M-01
System Specifications			
Wavelength [nm]	1,064	1,064	1,064
Average power [W]	60 @ 10kHz	100 @ 10kHz	200 @ 10kHz
Repetition rate range [kHz]	Single Shot ~ 50 kHz		
Pulse width [ns]	< 200 @ 10kHz	< 200 @ 10kHz	< 200 @ 10kHz
Spatial mode	TEM ₀₀ ~ MM	TEM ₀₀ ~ MM	MM
M ²	1.1 ~ 15	1.1 ~ 15	~ 25
Energy per pulse [mJ]	6 @ 10kHz	10 @ 10kHz	20 @ 10kHz
Long term stability(>8Hr)[%]	< 1	< 1	< 1
P to p stability [% rms]	< 5	< 5	< 5
Polarization	Random	Random	Random
Warranty	12 Month	12 Month	12 Month
Environmental Specifications			
Operating Conditions			
Warm up time [min]	< 10	< 10	< 10
Temperature [°C]	15 ~ 35	15 ~ 35	15 ~ 35
Humidity [%]	10 ~ 90	10 ~ 90	10 ~ 90
Cooling	Closed Loop Water Cooling	Closed Loop Water Cooling	Closed Loop Water Cooling
Non-Operating Conditions			
Temperature [°C]	5 ~ 50	5 ~ 50	5 ~ 50
Humidity [%]	10 ~ 90	10 ~ 90	10 ~ 90
Controller Specifications			
External control	RS-232 Interface, TTL	RS-232 Interface, TTL	RS-232 Interface, TTL
Voltage	220VAC 60Hz	220VAC 60Hz	220VAC 60Hz
Power consumption max.	2.2kW(3.806kW with chiller)		

Green Laser Key Specification

Technical Data	Industrial DPSS Laser / Solid-State, Side Pumped Laser		
Model	SPL-SG030x-01	SPL-SG050x-01	SPL-SG100M-01
System Specifications			
Wavelength [nm]	532	532	532
Average power [W]	30 @ 10kHz	50 @ 10kHz	100 @ 10kHz
Repetition rate range [kHz]	Single Shot ~ 50 kHz		
Pulse width [ns]	< 200 @ 10kHz	< 200 @ 10kHz	< 200 @ 10kHz
Spatial mode	Low Order Mode ~ MM	Low Order Mode ~ MM	MM
M ²	5 ~ 10	5 ~ 15	~ 15
Energy per pulse [mJ]	3 @ 10kHz	5 @ 10kHz	10 @ 10kHz
Long term stability(>8Hrs) [% rms]	< 1	< 1	< 1
Pulse to pulse stability [% rms]	< 5	< 5	< 5
Polarization	Linear	Linear	Linear
Warranty	12 Month	12 Month	12 Month
Environmental Specifications			
Operating Conditions			
Warm up time [min]	< 20	< 20	< 20
Temperature [°C]	15 ~ 35	15 ~ 35	15 ~ 35
Humidity [%]	10 ~ 90	10 ~ 90	10 ~ 90
Cooling	Closed Loop Water Cooling	Closed Loop Water Cooling	Closed Loop Water Cooling
Non-Operating Conditions			
Temperature [°C]	5 ~ 50	5 ~ 50	5 ~ 50
Humidity [%]	10 ~ 90	10 ~ 90	10 ~ 90
Controller Specifications			
External control	RS-232 Interface, TTL	RS-232 Interface, TTL	RS-232 Interface, TTL
Voltage	220VAC 60Hz	220VAC 60Hz	220VAC 60Hz
Power consumption max.	2.2kW(3.806kW with chiller)	2.2kW(3.806kW with chiller)	2.2kW(3.806kW with chiller)

Laser Source(End Pumped) - Introduction

- TEM00 mode for most industrial needs such as precision marking and micromachining
- IR/GR/UV Wavelength Products → Capable of responding to various output wavelengths
- Sealed structure and downsizing design
- S/W remote control → Laser Status Monitoring
- 24/7 operation possible by securing Long Term stability

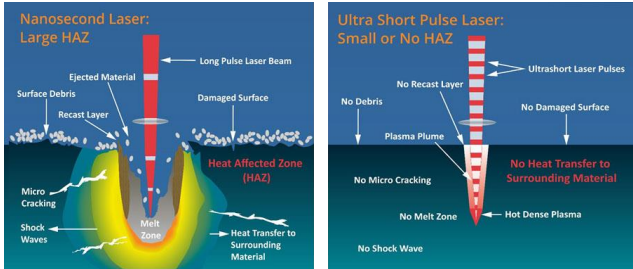
Laser Key Specification



Technical Data	Industrial DPSS Laser / Solid-State, End Pumped Laser		
Model	EPL-SS020T	EPL-SG005T	SPL-SU002T
System Specifications			
Wavelength [nm]	1064	532	355
Average power [W]	20 @ 30kHz	5 @ 30kHz	2 @ 30kHz
Repetition rate range [kHz]	Single Shot ~ 100 kHz		
Pulse width [ns]	< 20 @ 30kHz	< 17 @ 30kHz	< 15 @ 30kHz
Spatial mode	TEM00		
M ²	<1.2	<1.5	<1.5
Energy per pulse [uJ]	650 @ 30kHz	160 @ 30kHz	65 @ 30kHz
Long term stability(>8Hr) [%]	< 1	< 1	< 1
Pulse to pulse stability [% rms]	< 5	< 5	< 5
Polarization	Linear	Linear	Linear
Warranty	12 Month	12 Month	12 Month
Environmental Specifications			
Operating Conditions			
Warm up time [min]	< 5	< 15	< 20
Temperature [°C]	15 ~ 35		
Humidity [%]	10 ~ 90		
Cooling	Forced Air Cool (Water Cool Option)		
Non-Operating Conditions			
Temperature [°C]	5 ~ 45		
Humidity [%]	10 ~ 80		
Controller Specifications			
External control	RS-232 Interface, TTL		

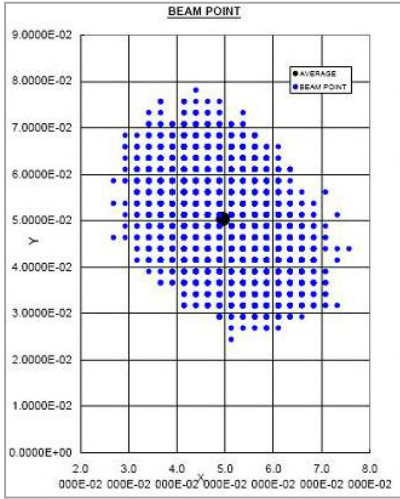
- All fiber based Ultra Short Pulses Laser Source
- Stable Mode locked Master Oscillator
- <10ps Ultra Short Pulse Width Laser
- Variable pulse picker – Pulse on demand available

Laser Key Specification

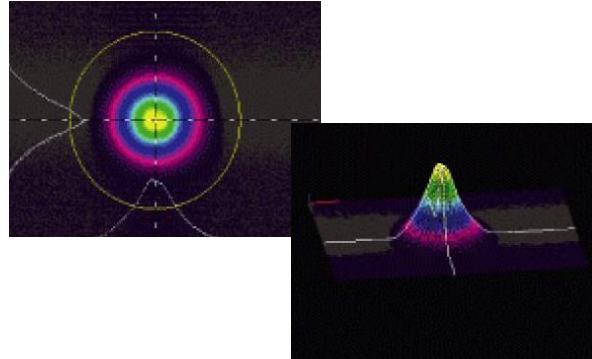


Technical Data	Industrial DPSS Laser / Solid-State, End Pumped Laser		
Model	FPL-MO001T	FPL-SS010T	FPL-SG005T
System Specifications			
Wavelength [nm]	1030	1030	515
Average power [W]	50mW @ 50MHz	10W @ 1MHz	5W @ 1MHz
Repetition rate range [kHz]	Single Shot ~ 2 MHz		
Pulse width [ps]	< 10ps	< 10ps	< 10ps
Spatial mode	TEM00		
M ²	<1.2	<1.2	<1.5
Long term stability(>8Hr) [%]	< 1		
Pulse to pulse stability [% rms]	< 3		< 5
Polarization	Linear	Linear	Linear
Warranty	12 Month	12 Month	12 Month
Environmental Specifications			
Operating Conditions			
Warm up time [min]	< 5	< 5	< 20
Temperature [°C]	15 ~ 35		
Humidity [%]	10 ~ 90		
Cooling	Closed Loop Water Cool (Forced Air Cool – Option)		
Non-Operating Conditions			
Temperature [°C]	5 ~ 45		
Humidity [%]	10 ~ 80		
Controller Specifications			
External control	RS-232 Interface, TTL		

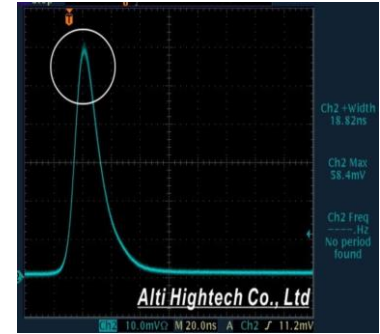
Laser Source - Stability



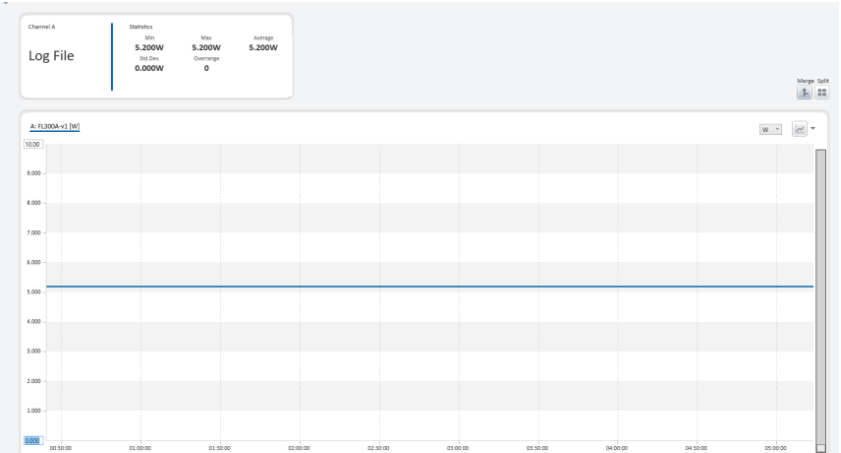
Beam 2D Pointing Stability Measurement Sheet



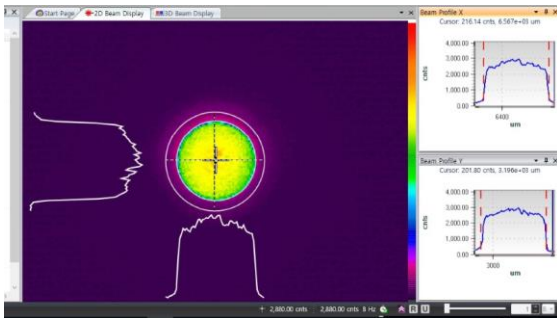
Beam Propagation Image



Measured Pulse Stability

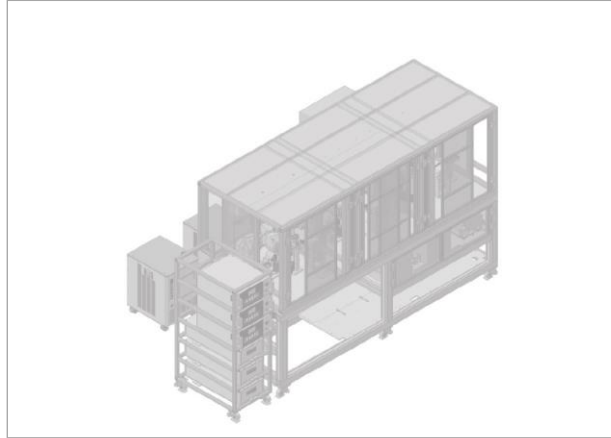


Long Term Stability Test



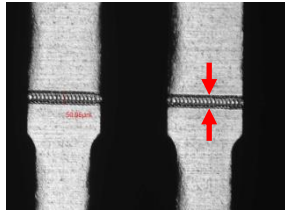
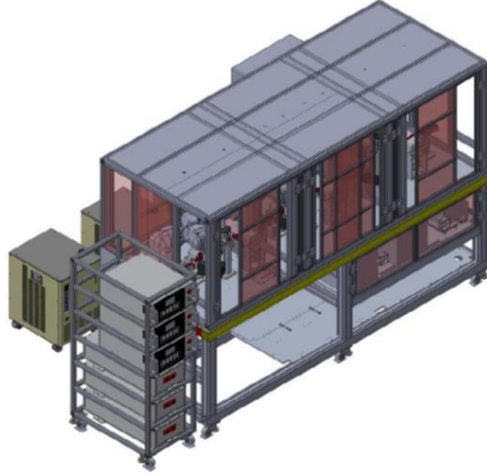
Beam Shaping Test

PEEL OF SYSTEM

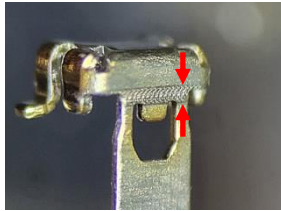


Peel Off System - Introduction

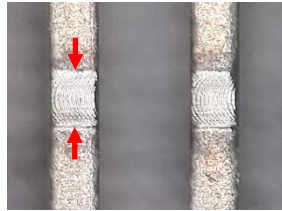
- The system that separates the Au and Ni layers of connectors with an RTR logistics device using a laser
- Optimized Optical system for Peel Off : Long DOF optical system / Co-axial Vision with Fiber optics
- Fully automated line system with articulated robot Arms



**Nickel-Chrome coating
(50 μ m line width)**



**Nickel-Gold coating
(100 μ m line width)**



**Nickel-Chrome coating
(200 μ m line width)**

Machine Key Specification

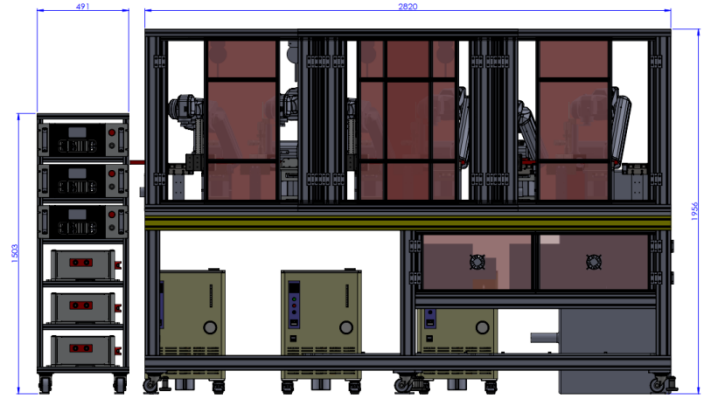
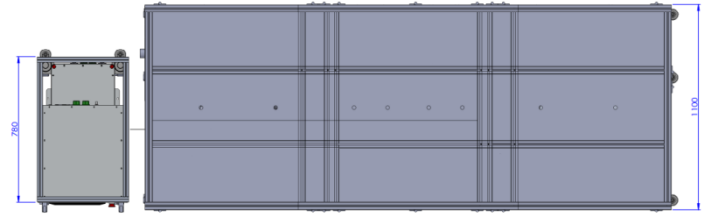
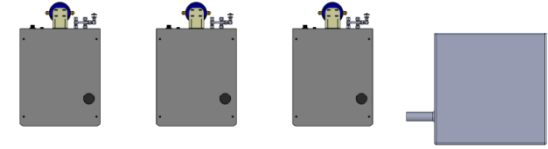
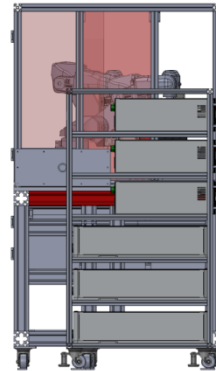
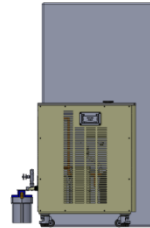
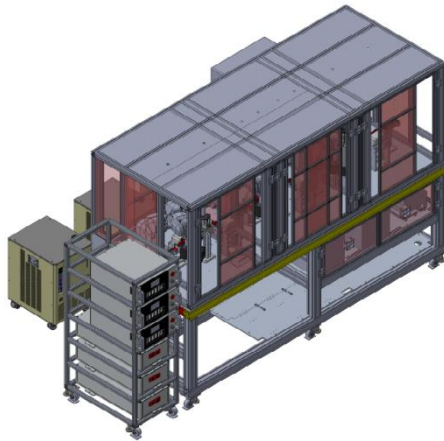
Material	Substrate	Metal material (TBD)	
	Std. Substrate Size	400mm x 500mm (TBD) (not limited in work size)	
System	Std. System Size	2,820(W) * 1,100(D) * 1,956(H) (TBD)	
	System Weight	Approx. 3,500kg	
	System Pass Line	1,000mm \pm 50mm (TBD)	
	Subst. Load/Unload	Manual Loading (TBD) – Auto available	
	Movement method	Roll to Roll	
	RTR Flatness	\pm 200 μ m	
	Max Process Speed	100mm/s	
	Process Width	50~200 μ m	
	Vision Align	Camera	1,024 X 768mm
		FOV	4.8 X 3.6mm
Resolution		< 3.0 μ m	
Laser Source	Optimizing your applications.		
System Control	Laser + Vision + UI + Sequence control _ PC		

※ The above specification is changed at the request of the customer.

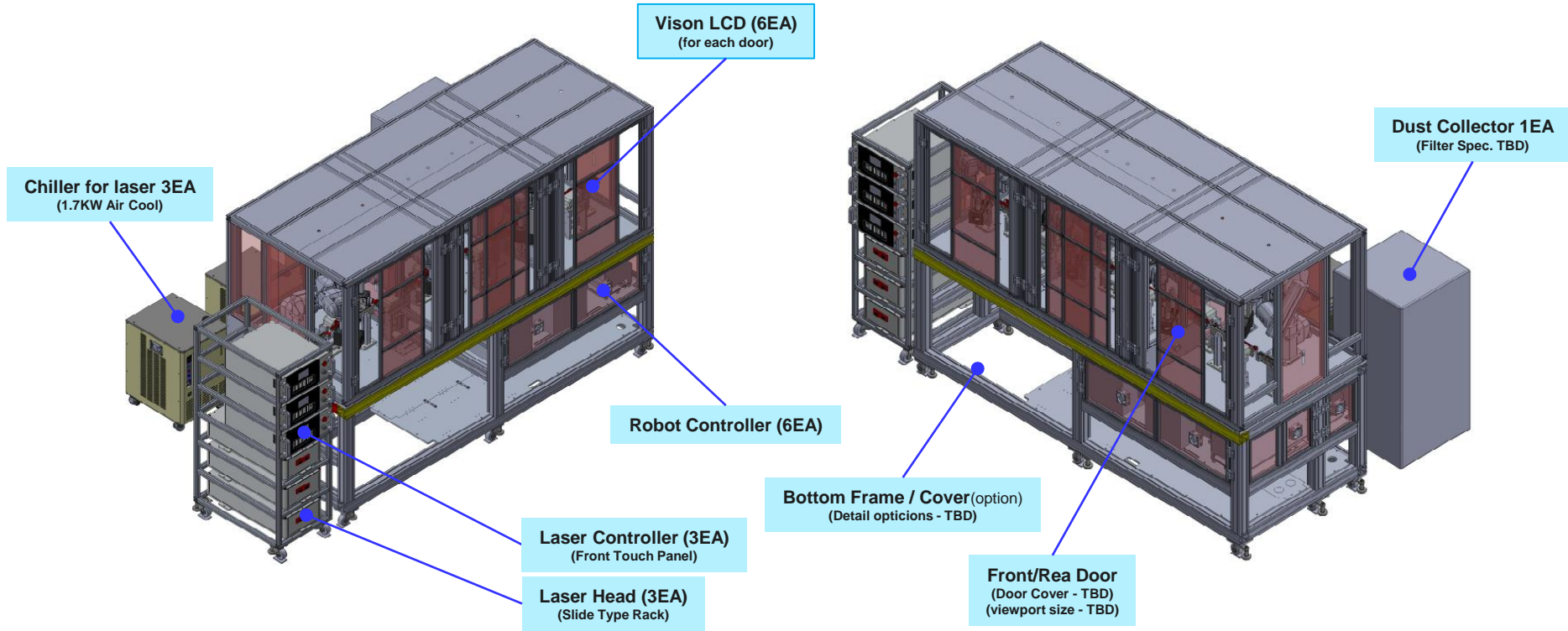
Peel Off System - Lay Out

System Lay Out	Main System Size	2,820(W) x 1,100(D) x 1,956(H)
	Chiller	430(W) x 700(D) x 580(H)
	Laser Rack Mount Size	491(W) x 780(D) x 1,530(H)
	Dust Collector	520(W) x 542(D) x 855(H)

※ The drawing below is an initial layout and may change during detailed design.

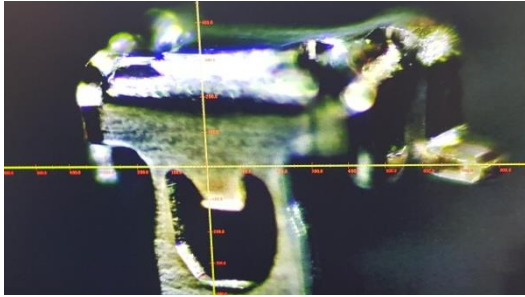


Peel Off System - Composition



Peel Off System - Coaxial Vision Module

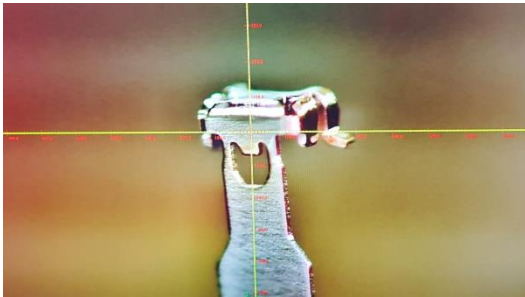
- Developed for application optimization, high stability and improved process reliability
- Magnification, FOV, and various functions can be added according to customer needs



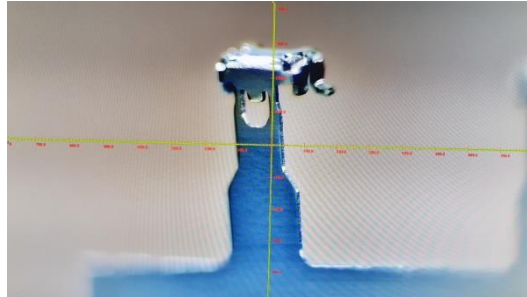
FoV : 2 x 1.2



FoV : 3.2 x 1.9

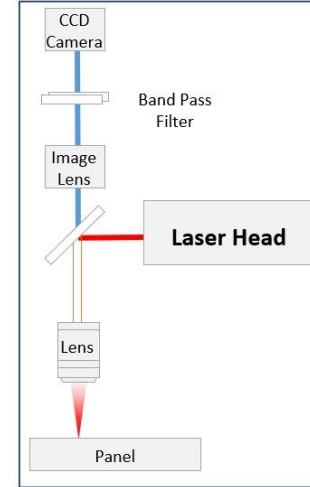


FoV : 5.3 x 3



FoV : 7.1 x 4

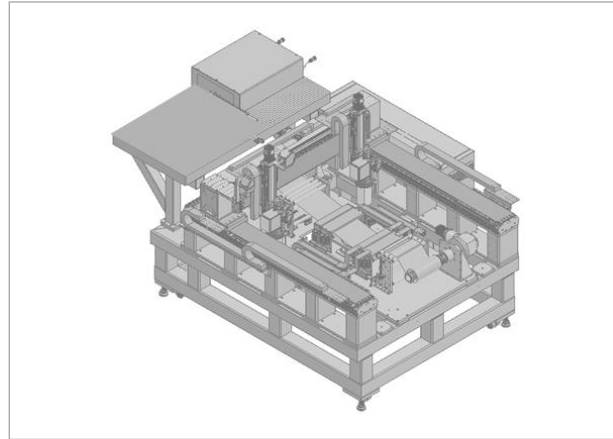
The diagram of coaxial vision



Key Specification

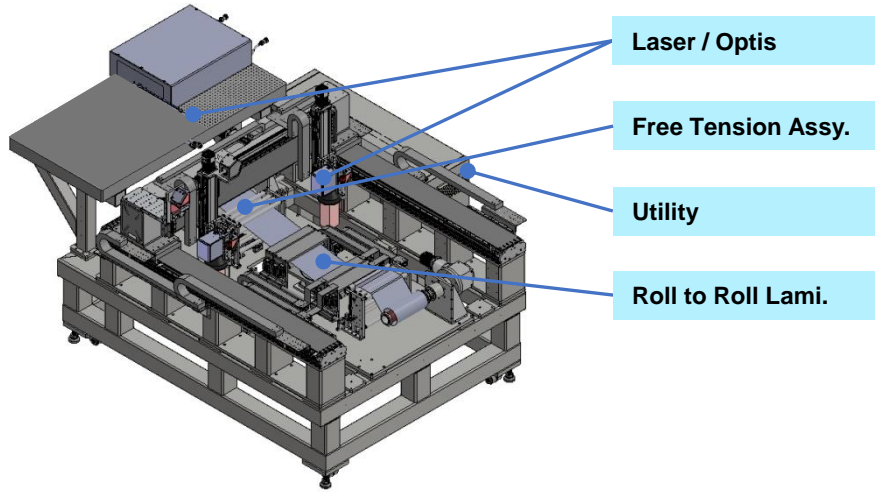
Camera	75x60x39mm (LxWxH) _ 1/3" CMOS
FOV	Variable (2x1.2mm ~ 7.1x4mm_software)
Resolution	< 3.0 um

WAFER BG TAPE FREE LAMI. & LASER CUTTING SYSTEM



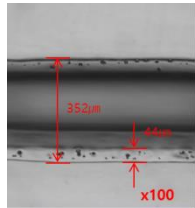
Wafer BG Tape Free LAMI & Laser Cutting System - Introduction

- Free Tension Lamination of Wafer Back Grinding Film
- Laser cutting of film - Offset can be set freely from the wafer edge

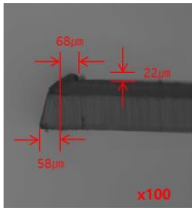


Machine Key Specification

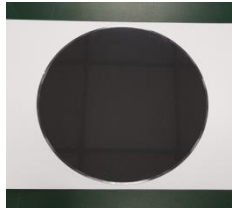
Material	Substrate	Films / PCB / Glass / any sheet type subst.	
	Std. Substrate Size	8"~12" Wafer	
System	Std. System Size	2,500(W) * 2,600(D) * 1,600(H) (TBD)	
	System Weight	Approx. 3,500kg	
	System Pass Line	800mm±50mm (TBD)	
	Subst. Load/Unload	Manual Loading (TBD) – Auto available	
	Movement method	Roll to Roll	
	Stage Flatness	± 25um	
	Max Process Speed	>200mm/s	
	Laser Cutting Accuracy	≤ ±10um	
	Vision Align	Camera	1024 X 768mm
		FOV	4.8 X 3.6mm
Resolution		< 3.0 um	
Laser Source	Optimizing your applications.		
System Control	Laser + Vision + UI + Sequence control _ PC		



BG Tape Cutting

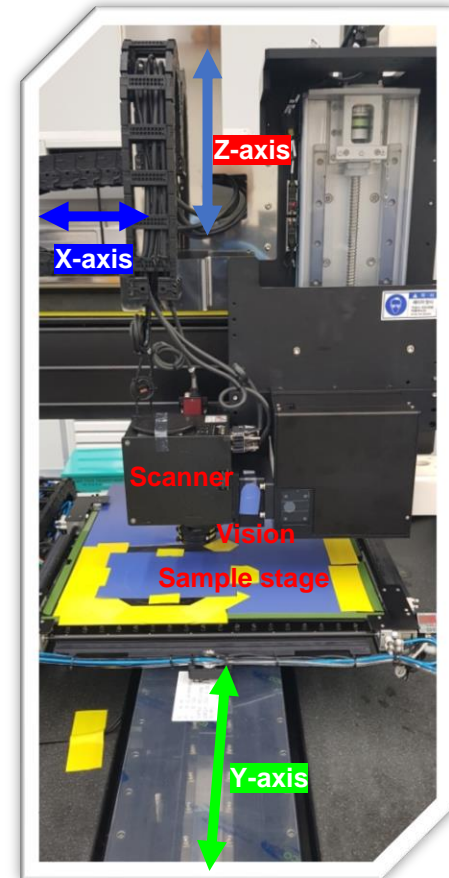
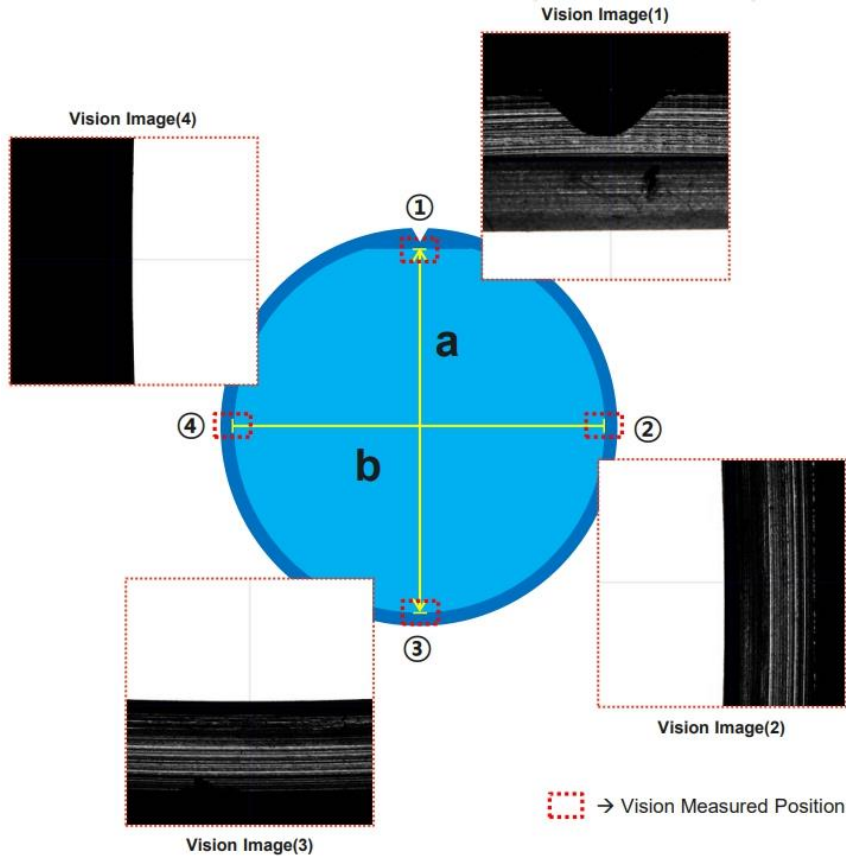


BG Tape Lamination



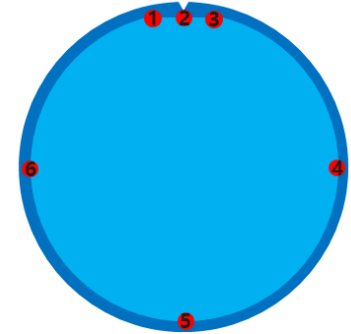
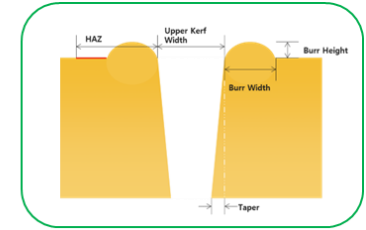
8" Wafer Sample

※ The above specification is changed at the request of the customer.



Wafer BG Tape Free LAMI & Laser Cutting System - Result

Wafer	Point 1(μm)	Point 2(μm)	Point 3(μm)	Point 4(μm)	Point 5(μm)	Point 6(μm)	Max-Min(μm)
1	 DL0 L=118.215 μm 118	 DL0 L=127.942 μm 128	 DL0 L=126.551 μm 127	 DL0 L=94.668 μm 95	 DL0 L=97.341 μm 97	 DL0 L=125.160 μm 125	33
2	 DL0 L=115.628 μm 115	 DL0 L=108.422 μm 108	 DL0 L=119.598 μm 120	 DL0 L=91.784 μm 91	 DL0 L=93.777 μm 99	 DL0 L=104.337 μm 104	29
3	 DL0 L=115.963 μm 115	 DL0 L=115.454 μm 110	 DL0 L=113.588 μm 120	 DL0 L=92.404 μm 90	 DL0 L=89.003 μm 89	 DL0 L=108.566 μm 109	31
4	 DL0 L=108.472 μm 108	 DL0 L=112.653 μm 113	 DL0 L=108.472 μm 108	 DL0 L=104.300 μm 104	 DL0 L=102.919 μm 103	 DL0 L=118.215 μm 118	15
5	 DL0 L=107.002 μm 107	 DL0 L=107.002 μm 107	 DL0 L=109.700 μm 106	 DL0 L=105.691 μm 106	 DL0 L=108.472 μm 108	 DL0 L=112.644 μm 113	7
Max-Min(μm)	11	21	21	16	19	21	



Overhang measured positions

Top View

Cross Section View



CO2

UV Pico

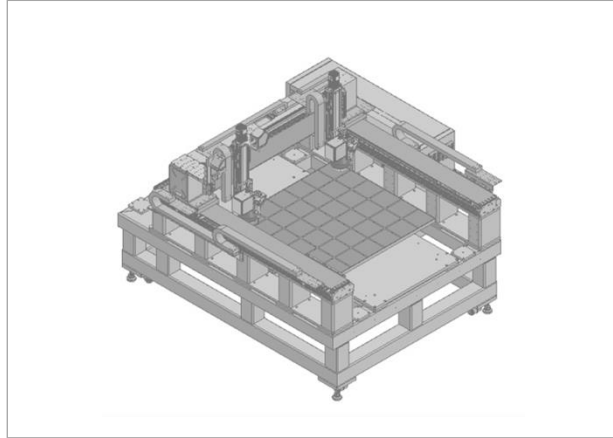
UV Nano

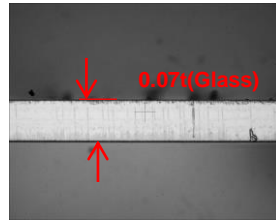
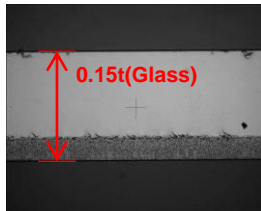
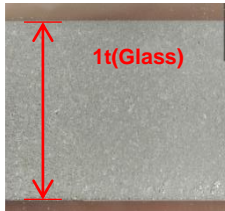
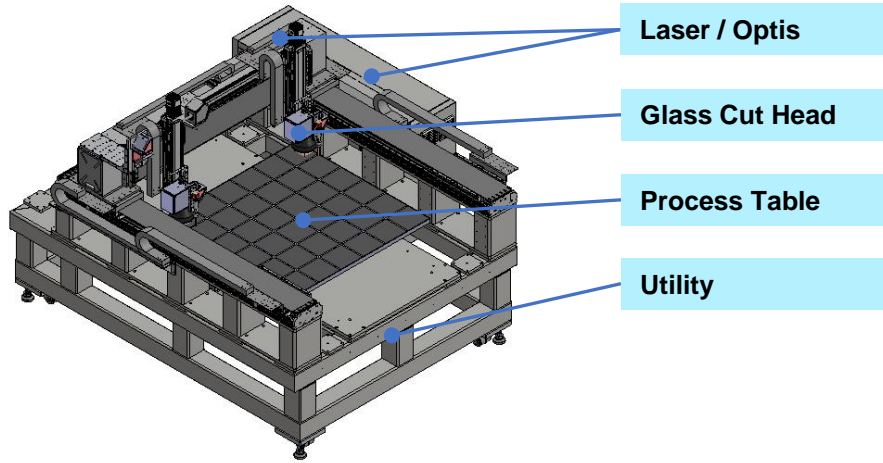
CO2

UV Pico

UV Nano

Large Area Glass Cut





Glass Cutting

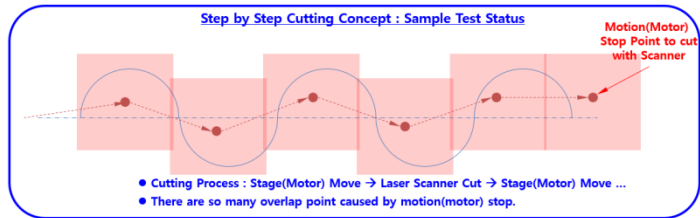
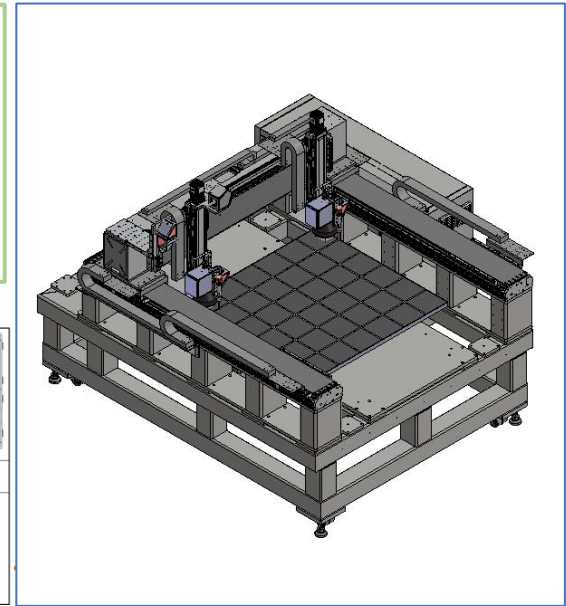
Machine Key Specification

Material	Substrate	Films / PCB / Glass / any sheet type subst.	
	Std. Substrate Size	500mm x 500mm (TBD) (not limited in work size)	
System	Std. System Size	2,500(W) * 2,600(D) * 1,600(H) (TBD)	
	System Weight	Approx. 2,500kg	
	System Pass Line	1,000mm±50mm (TBD)	
	Subst. Load/Unload	Manual Loading (TBD) – Auto available	
	Cutting Station	Pin Hole with Vacuum or Porous	
	Stage Flatness	± 25um	
	Max Cutting Speed	>200mm/s	
	Laser Cutting Accuracy	≤ ±10um	
	Vision Al ign	Camera	1024 X 768mm
		FOV	4.8 X 3.6mm
		Resolution	< 3.0 um
	ESD		CDA – Air blow, Anti-ESD coating material
	System Control		Laser + Vision + UI + Sequence control _ PC

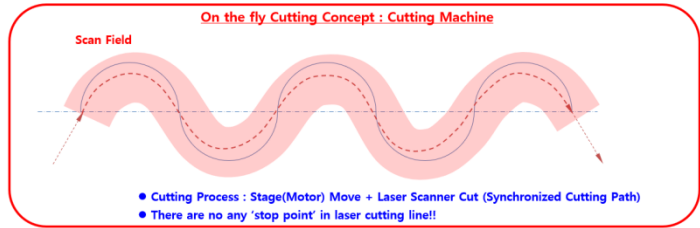
※ The above specification is changed at the request of the customer.

Laser Cut / Patterning / Marking for Large Area MotF

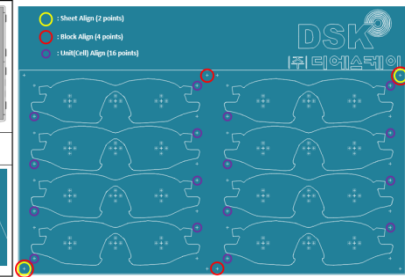
- Used for Large Area Laser Cutting/Patterning/Marking Applications with sheet type various substrates
- Continuous Line Laser processing without size limited
- System Control Type : PC with Laser & Motion Syncroized Concept
- Fine Alignment Vision & Precision Area Compensation System : Processing Accuracy < 10um
- The development of the full auto probe station for OLED is completed



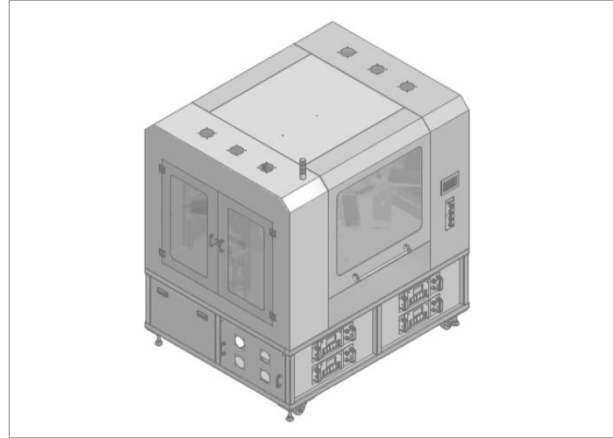
Large Area Water Film Cut	Setup Image			
	Working	▷ Limited Water Loading - Manual	▷ Water Align - finding water edge Water Edge(Probe) - match thin Water ▷ UV Laser for base coating ▷ Unloading	▷ measure the Water Thinning Edge - Film offset ▷ Check the cutting quality and position accuracy
Manual Lamination	Result			
			Align	



Large Area Google Sheet Cut	Setup Image				
	Working	▷ Blank Sheet Loading - Manual	▷ Blank Tracking with DMF (UV Laser) Align Mark + Setup Marking only ▷ Unloading - Manual ▷ Check the marking quality	▷ Patterned Sheet Loading - Manual ▷ Auto Align → Google Sheet → Size Marking ▷ Check the marking quality and position accuracy	
Accuracy Check	Result	Blank			
			Align Reference Mark(Cross)		

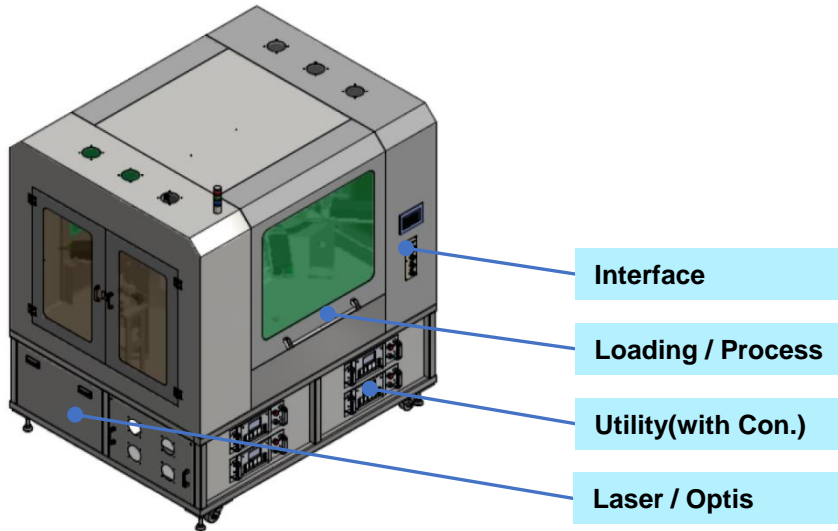


MARKING SYSTEM



Marking System - Introduction

- Marking (Cutting/Patterning) device using various lasers
- Easy maintenance and operation
- Remote control interfaces
- Applicable to various wavelengths/types of laser → Optimized for various material conditions
- Continuous upgrade support



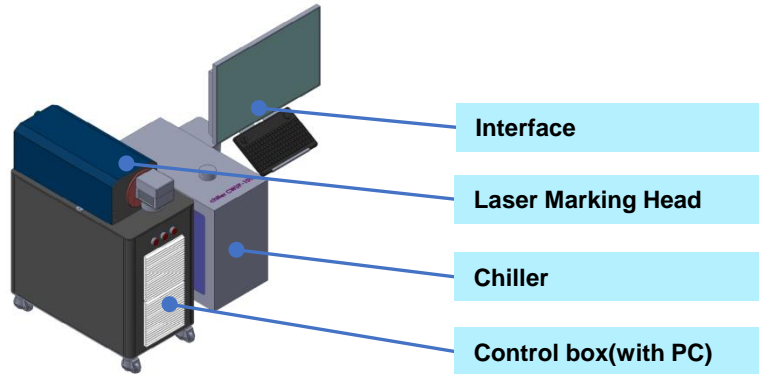
Machine Key Specification

Material	Substrate	Films / PCB / Glass / food container / any sheet type subst.	
	Std. Substrate Size	200 * 200mm (TBD)	
System	Std. System Size	2,100(W) * 1,800(D) * 2,200(H) (TBD)	
	System Weight	Approx. 2,500kg	
	System Pass Line	1,000mm±50mm (TBD)	
	Subst. Load/Unload	Manual Loading (TBD) – Auto available	
	Cutting Station	Pin Hole with Vacuum	
	Stage Flatness	± 100um	
	Max Marking Speed	500mm/s	
	Laser Marking Accuracy	± 100um	
	Vision Align	Camera	1024 X 768mm
		FOV	4.8 X 3.6mm
Resolution		< 3.0 um	
	Laser Source	Optimizing your applications.	
	System Control	Laser + Vision + UI + Sequence control _ PC	

※ The above specification is changed at the request of the customer.

Marking Module - Introduction

- Marking (Cutting/Patterning) device using various lasers
- Easy maintenance and operation
- Remote control interfaces
- Applicable to various wavelengths/types of laser → Optimized for various material conditions
- Continuous upgrade support
- Waterproof IP67/IP 66 Grade of Laser Head – Response to high humidity production environment

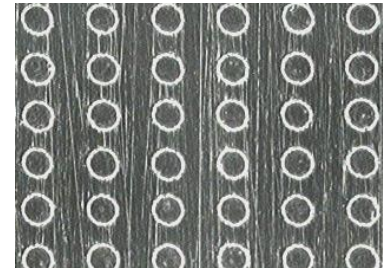
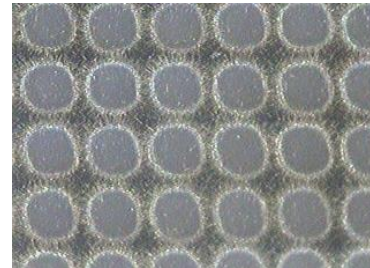
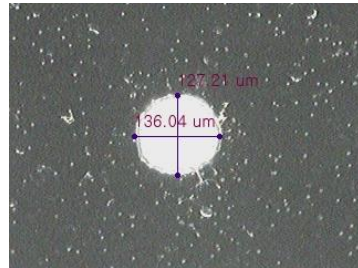
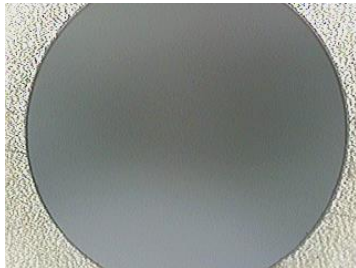
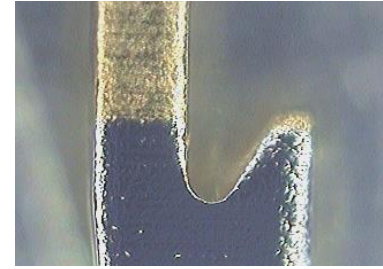
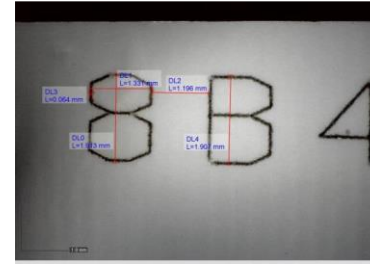
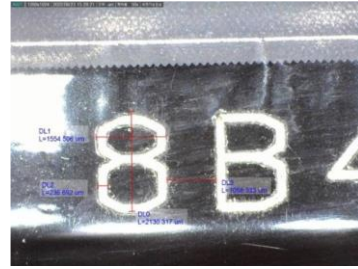
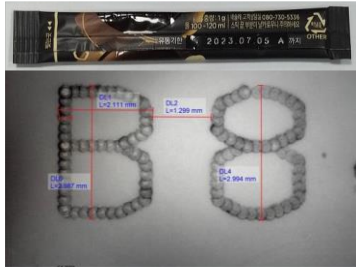
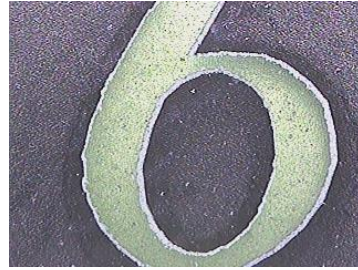


Machine Key Specification

Material	Substrate	Films / PCB / Glass / food container / any sheet type subst.
	Std. Substrate Size	200 * 200mm (TBD)
Marker	Water and dust IP ratings	IP 67 / 66 (option)_Laser Head
	Laser Power [W]	20 / 5 / 2
	Wavelength [nm]	1,064 / 532 / 355
	Speed [mm/s]	≤ 500
	M2	<1.5 / 2.0 / <1.2
	Output power stability(typical)[%]	3 / 1 / < 5
	Operating Conditions	Power Supply
Temperature [°C]		15 ~ 35
Humidity [%]		10 ~ 90
Cooling		Forced Air Cooling or Water

※ The above specification is changed at the request of the customer.

Marking/Cutting System - Result



Marking System - Marking Grade

TruCheck Verification - DM8072-6A54CE

Settings icons: [C] [A] [45] [30] [30] [30] [90]

Navigation tabs: Main | General Characteristic | Data Detail | Quality Detail | Advanced Detail | Histogram

Overall ISO29158 Grade
A (4.0)
DPM 4.0/15/660/45Q

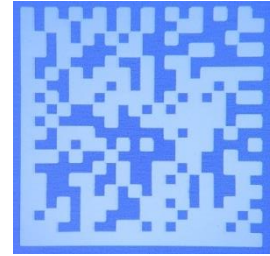
Grade Parameters

Unused Error Correction (UEC)	100% A
Cell Contrast (CC)	47% A
Cell Modulation (CMOD)	A
Reflectance Margin (RM)	A
Axial Nonuniformity (ANU)	1.4% A
Grid Nonuniformity (GNU)	4.5% A
Fixed Pattern Damage (FPD)	4.0 A
Left 'L' Side (LLS)	A
Bottom 'L' Side (BLS)	A
Left Quiet Zone (LQZ)	A
Bottom Quiet Zone (BQZ)	A
Top Quiet Zone (TQZ)	A
Right Quiet Zone (RQZ)	A
Top Transition Ratio (TTR)	0% A
Right Transition Ratio (RTR)	0% A
Top Clock Track (TCT)	A
Right Clock Track (RCT)	A
Distributed Damage Grade (DDG)	4.0 A
DECODE	A
Minimum Reflectance (MR)	52% A

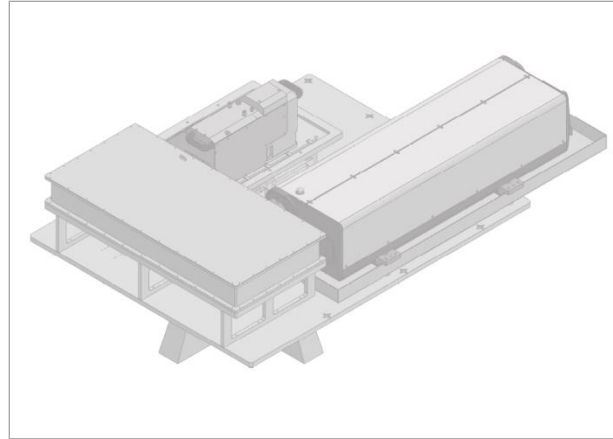
Symbology
DataMatrix

Go Live

Generic Acceptance Criteria
Pass
Data
alti_high_tech_1234567890

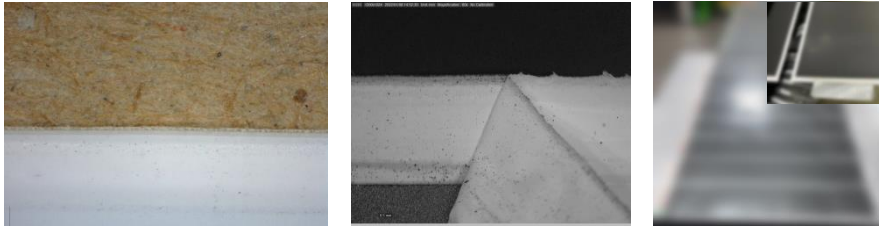
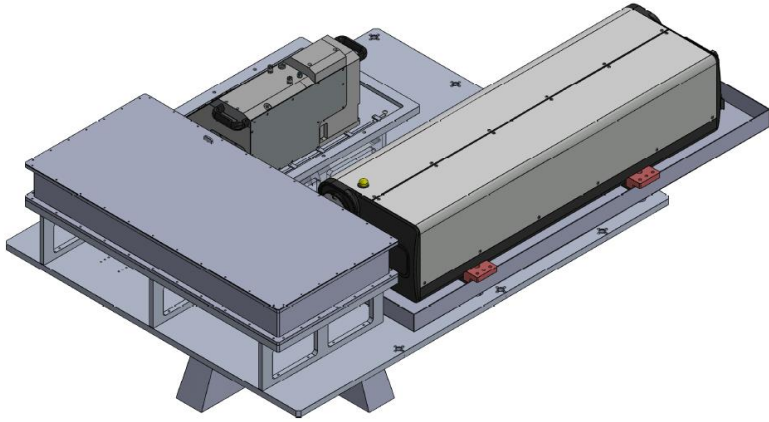


Secondary Battery Separator Laser Cutting Module



Secondary Battery Separator Cutting System - Introduction

- A machine that cuts high-speed moving battery materials with a laser
- more than 15,000mm/s cutting speeds available

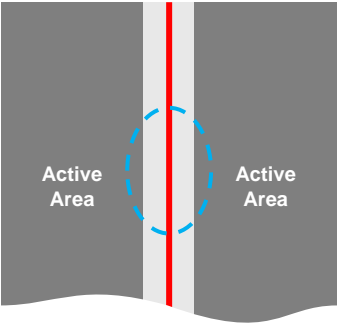


Machine Key Specification

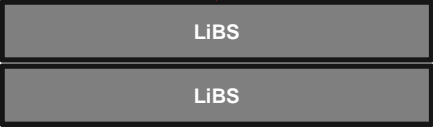
Material	Substrate	Secondary Battery Separator
	Std. Substrate Size	Width 600mm(Movement method : Roll to Roll)
Laser	Wavelength [um]	9.3
	Average power [W]	400
	Repetition rate range [kHz]	0 ~ 100
	Pulse width [us]	2 ~ 400
	Polarization	Linear
Scanner	Wavelength [um]	9.4
	Entrance aperture[mm]	16
	Interface	SL2-100
	Water cooling	3 l/min, p < 4.5 bar
	Weight	35 kg
	Tracking error	< 0,45 ms
	Typical positioning speed	20 rad/s
Controller board	Scanlab RTC Control boards	

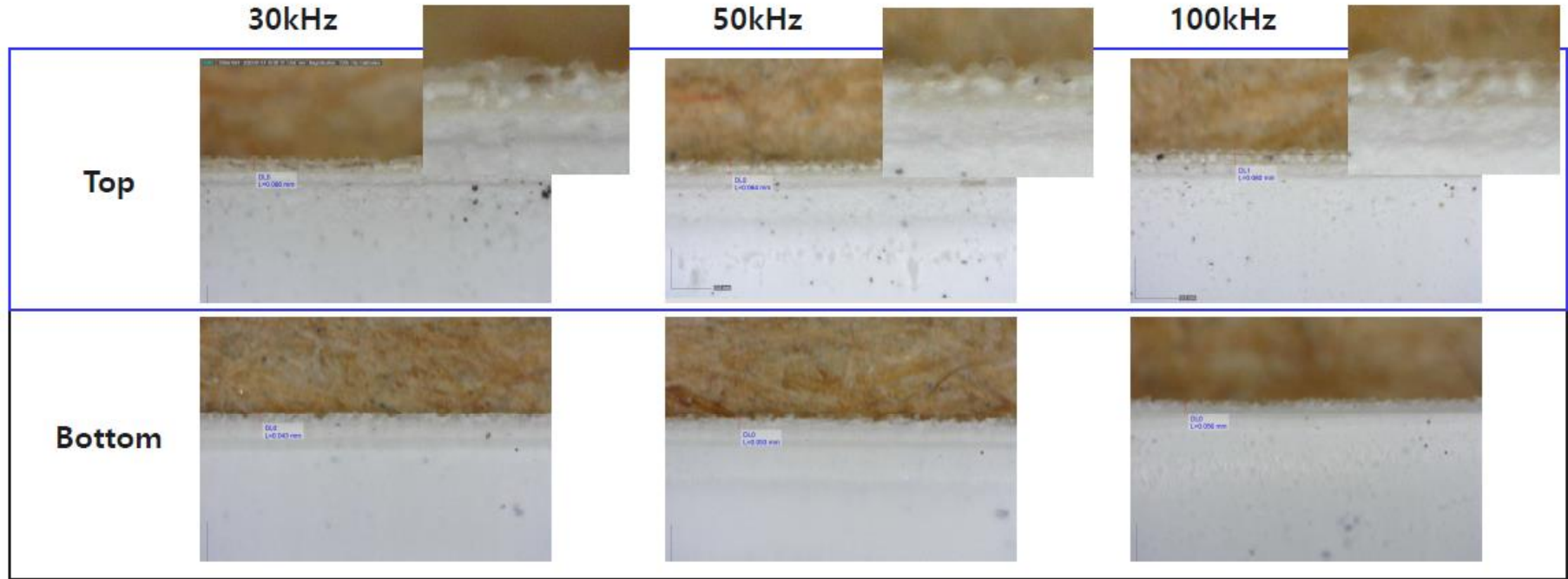
※ The above specification is changed at the request of the customer.

Secondary Battery Separator Cutting System - Result

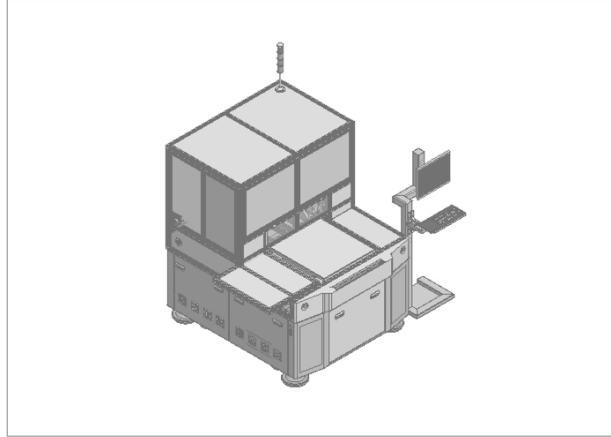


Flow



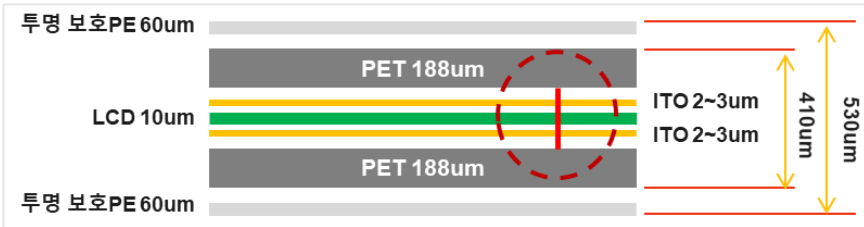
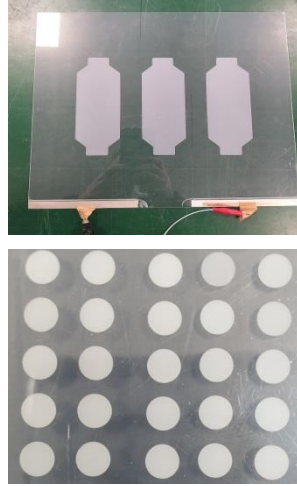
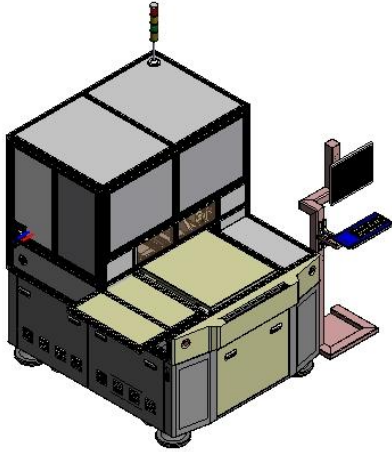


ITO PATTERNING



ITO Patterning - Introduction

- Device for ITO Patterning of PDLCD

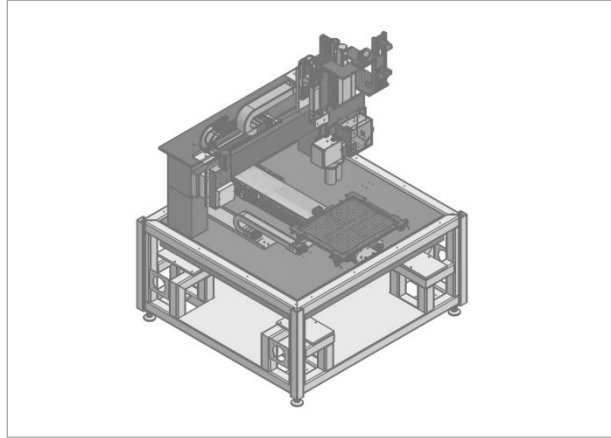


Machine Key Specification

Material	Substrate	PDLCD	
	Std. Substrate Size	400 * 400mm (TBD)	
System	Std. System Size	1,500(L) * 2,200(W) * 1,900(H)	
	System Weight	Approx. 1,500kg	
	System Pass Line	1,000mm±50mm (TBD)	
	Subst. Load/Unload	Manual Loading (TBD) – Auto available	
	Cutting Station	Pin Hole with Vacuum	
	Stage Flatness	± 50um	
	Max Marking Speed	>500mm/s	
	Laser Patterning Accuracy	≤ ±20um	
	Vision Align	Camera	1024 X 768mm
		FOV	4.8 X 3.6mm
Resolution		< 3.0 um	
Laser Source	Optimizing your applications.		
System Control	Laser + Vision + UI + Sequence control _ PC		

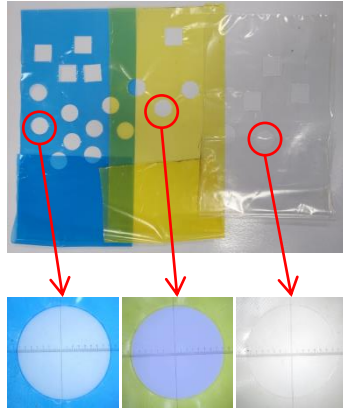
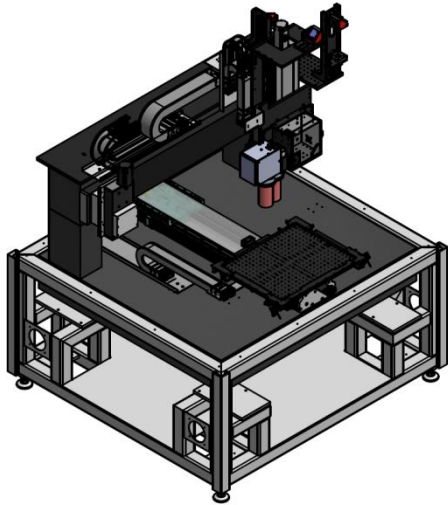
※ The above specification is changed at the request of the customer.

3D FILM CUTTING MODULE



3D Film Cutting - Introduction

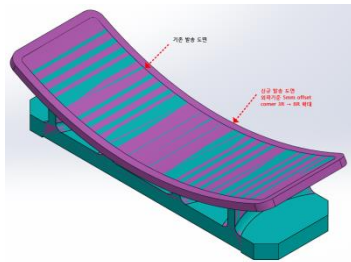
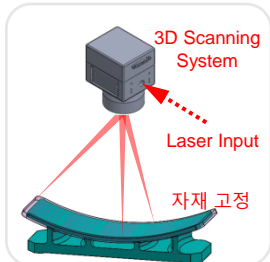
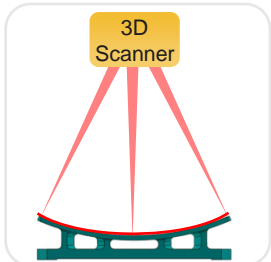
- Laser Cutting the Vairous films attached to the 3D molded glass



Machine Key Specification

Material	Substrate	Film (with 3D Glass LAMI)	
	Std. Substrate Size	400 * 400mm (TBD)	
System	Std. System Size	1,500(W) * 1,600(D) * 1,800(H) (TBD)	
	System Weight	Approx. 1,500kg	
	System Pass Line	1,000mm±50mm (TBD)	
	Subst. Load/Unload	Manual Loading (TBD) – Auto available	
	Cutting Station	Pin Hole with Vacuum	
	Stage Flatness	± 50um	
	Max Marking Speed	>500mm/s	
	Laser Patterning Accuracy	≤ ±20um	
	Vision Align	Camera	1024 X 768mm
		FOV	4.8 X 3.6mm
Resolution		< 3.0 um	
Laser Source	Optimizing your applications.		
System Control	Laser + Vision + UI + Sequence control _ PC		

※ The above specification is changed at the request of the customer.



alti hightech **Merits**

Shared growth principle

At our core, we prioritize our customers' success because we understand that our own success is dependent on theirs. We strive to foster shared growth with all companies we do business with by creating successful products from the initial stages of development through mass production.



Best customer support

At AlthHightech Co., Ltd., we are dedicated to ensuring our customers' satisfaction and success. To achieve this goal, we are in the process of establishing a comprehensive infrastructure that will provide end-to-end services, including optimal product supply and product utilization support.

Optimal product development

We take pride in our commitment to offering products that align with consumer trends and market demands. Our goal is to provide a diverse range of high-quality products that meet various needs and price points. Additionally, we offer a unique opportunity to select from our laser products, which are developed using AltiHightech's proprietary technology and expertise.

