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SAMIL

www.samiltech.com

State-of-the-Art Technology

최고의 기술력으로 최상의 가치를 창조하는 기업

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Contents

Company Overview

State-of-the-Art Technology

A company creating the best value with cutting-edge technology

Samil Tech Co., Ltd. is a professional company that develops and manufactures semiconductor equipment and automation equipment. Since its founding in 1993, the company has been supplying various types of equipment to both domestic and overseas manufacturing companies. Samil Tech specializes in semiconductor equipment and automation equipment including trim/form equipment, semiconductor package inspection equipment, laser deflash equipment, and laser marking equipment. We endeavor to be the number one company that creates the highest value with the best products through persistent R&D and quality improvement.

以最领先的技术、创造最大价值的企业

三一技术（株）是一家专业开发、设计、制造半导体后道设备及全自动化设备的专业公司。自1993年创立以来，向国内外诸多半导体生产制造企业供应着各种半导体制造设备。特别是切筋/成型设备、封装检查设备、激光去毛刺设备、激光打标设备等半导体设备和自动化设备。我们一直不断地研究开发、品质改善，尽其一切努力成为一家‘以最优质的设备，创造出最大价值的企业’。

History of Samil Tech

1993.09	Foundation of Samil Engineering
1998.04	Selected as a 'Promising Small & Medium Business Company' by Gyeonggi Province
1998.11	Acquired 'ISO 9001' certification
1999.08	Renamed Samil Tech Co., Ltd
2000.01	Registered as a venture company
2006.06	Obtained Innovation Business Company (INNO-BIZ) from Korean Government
2007.11	Acquired 'ISO 14001' certification
2008.06	Selected as a 'Promising Export Firm' by Small and Medium Business Administration
2012.05	Selected as a 'Global Strong & Small Business Company' by Korean Government
2013.05	'Matrix Trim Form Machine' was awarded for The Best Machine by Bucheon City
2018.03	Participated in Exhibition of SEMICON 2018, China
2018.09	Participated in Exhibition of HANNOVER MESSE 2018, USA
2018.11	Participated in Exhibition of MEDICA 2018, Germany
2019.03	Participated in Exhibition of SEMICON 2019, China
2019.07	Selected to be 'Bucheon Small Giants' by Bucheon City
2019.10	Citation was awarded by Ministry of Trade, Industry & Energy
2020.06	Participated in Exhibition of SEMICON 2020, China

1993. 09	创立三一工程
1998. 04	由京畿道，评定为‘京畿道明星中小企业’
1998. 11	获得‘ISO 9001’认证
1999. 08	更名为三一技术株式会社
2000. 01	注册为高新技术企业
2006. 06	由韩国政府，评定为‘技术革新型中小企业(INNO-BIZ)’
2007. 11	获得‘ISO 14001’认证
2008. 06	由中小企业厅，评定为‘出口明星中小企业’
2012. 05	由韩国政府，评选为‘国际强小企业’
2013. 05	荣获‘富川市最后优秀产品奖’ [Matrix Trim Form Machine]
2018. 03	参加‘中国SEMICON 2018’
2018. 09	参加‘美国HANNOVER MESSE 2018’
2018. 11	参加‘德国MEDICA 2018’
2019. 03	参加‘中国SEMICON 2019’
2019. 07	由富川市，评选为‘小巨人企业’
2019. 10	荣获韩国产业通商资源部的技术开发奖状
2020. 06	参加‘中国SEMICON 2020’

Major Customers

Semi-Conductor

ON Semiconductor	SK hynix	SAMSUNG	LG
HUAWEI	infineon	ShinDengen	ST
SanKen	Midea	GREE 格力	ITM (주)아이티엠반도체 ITM SEMICONDUCTOR CO.,LTD.
SMIC SMEC	SP Semiconductor & Communication	CSIC 芯光润泽科技有限公司	華潤微电子 CR MICRO
hitech semiconductor	powertron	Carsem	PSi TECHNOLOGIES, INC.
NXP	FAGOR	ROHM SEMICONDUCTOR	ASE GROUP 日月光集團
华微电子 SINO-MICROELECTRONICS	中国中车 CRRC	SFA SEMICON	KODENSHI

Factory Automation & Health Care

(주)우주일렉트로닉스	HANS Biomed	HYUNDAI MOBIS	inalfa roof systems
samyang	TM Glass 铁锚玻璃	IKARI	ALAE
META BIOMED BEYOND EXPECTATIONS	ESSEN	ESSYS (주)이씨스	최고의 품질과 고객이 최우선인 기업 KS표시 허가업체 BOKWANG CITY

Trim Form System

Matrix Trim/Form/Singulation System

Specification

Devices	DPAK	Index	4 index fingers synchronized with CAM press
UPH	More than 44,800 units (2 up 8 units)		
Press	2 mechanical CAM press	Controller	PLC
Loader	2 magazines, 1 elevator	Air	5~6 Kgf/cm2
Unloader	2 tube stacker, bulk tube box	Dimensions (W x D x H, mm)	2,950 x 1,100 x 1,650

This system consists of loader, four indexes, two mechanical CAM presses, a trimming tool, a forming/singulation tool, rotator & drawer and unloader. Dejunk, dambar cut and lead length cut are done in trimming process. Forming process shapes trimmed leads into appropriate form so that mounting is possible, and singulation process separates packages in a strip.
Drawer pushes singulated packages into tubes and rotator rotates packages in 1 and 3 row to insert them into tubes as same direction.

本设备由一组上料区、四个输送机构、一副切筋模具、
一副成型/分离模具、一组下料区、旋转搬运机构和两个凸轮式压机所组成。
切筋工程将切除产品的余胶、连筋、多余的引脚；
成型工程按照图纸要求折弯产品的引脚，使产品能够装配；
然后在分离工程把引线框架上的产品分离成每颗产品。
之后在旋转机构旋转1/3排产品使产品方向一致，最后通过搬运机构把产品推入到料管。

Trim Form System

Marking & Trim/Form System

Specification

Laser	30W fiber laser	Controller	PLC
Vision	Marking & lead inspection	Air	5~6 Kgf/cm2
Press	CAM press	Dimensions (W x D x H, mm)	2,400 x 2,200 x 1,600

This is combined system of laser marking, trimming and forming, and vision. After strips are loaded in stack magazine, laser marking is done on package surface in strip. One side or both side marking can be done selectively.
Then, trimming and forming/singulation are done by each tooling. Skew tooling is installed to correct leads to meet high specification requirement. Marking vision and lead vision are installed for inspection of those quality. Reject packages are sorted into a reject tube and good packages are loaded into good tubes. Bulk tube stacker is installed for automatic loading of tubes.

本设备是一台结合 ‘激光标记、切筋成型、外观检查功能’ 的组合系统。
条形框架从堆积料盒加载后，板条状态下对封装表面进行激光标记。
可以通过选项选择：单面标记或双面标记。
然后，由各个模具来完成切筋和成型/分离工作。
具备整形模具校正引脚，以满足高规格要求。
具备外观检查相机，以检查激光标记、引脚尺寸的品质。
不良品将分选到不良料管，良品则推入到良品料管。
设备具备料管支架、以自动加载料管。

Trim Form System

Automotive Power Module Form/Singulation System

Specification

Devices	APM7, APM11	Vision	Orientation & type inspection
Press	Hydraulic press	Skew	Lead pitch & span correction
SPM	More than 25	Controller	PLC
Loader	Multi slot magazines	Air	5~6 Kgf/cm2
Unloader	Tray stackers	Dimensions (W x D x H, mm)	2,950 x 1,700 x 1,900

This system is for forming and singulation of APM7 and APM11 strips trimmed by DDD system. Once trimmed APM7 and APM11 strips are loaded in slot magazines, they are formed and singulated in tooling and then, skew tooling corrects lead pitch and span to meet tight tolerance and CPK requirement. After skew tooling, package is automatically loaded in unloader tray by pick and place device. Vision has been installed for orientation and type check.

本设备用于DDD去胶系统完成修剪的APM7和APM11框架的成型和分离工作。
修剪过的APM7和APM11框架从槽盒加载，它们在模具中进行成型和分离工作后；
在整形模具校正引脚间距和跨距，以满足高精度公差和CPK要求。
完成整形工作的产品将通过真空取放机构自动装入到托盘。
设备具备外观检查功能，以检查方向和类型。

Trim Form System

IGBT Trim Form System

Specification

Devices	IGBT	Vision	Orientation & type inspection and lead inspection
UPH	More than 900 units	Skew	Lead pitch & span correction
Press	Hydraulic press	Controller	PLC
Loader	Adjustable slot magazine	Air	5~6 Kgf/cm2
Unloader	Adjustable tray stacker	Dimensions (W x D x H, mm)	4,800 x 1,500 x 1,900

This system is for trimming and forming of DSC.
Once DBC strips are loaded in slot magazine, they are trimmed and formed in tooling and then, skew tooling corrects lead pitch and span to meet tight tolerance and CPK requirement.
After skew tooling, package is automatically loaded in unloader tray.
Vision is installed for orientation & type inspection and lead inspection.

本设备用于DSC产品的切筋和成型工作。
将把DSC框架装入槽盒后，在模具中进行切筋成型工作；
然后在整形模具校正引脚间距和跨距，以满足严格的公差和CPK要求。
整形工作后，产品将自动装入到托盘。
设备具备检查相机，用于产品定位、确认产品类型、检查引脚尺寸。

Trim Form System

In-Line System

Specification

Loader	Stack magazine	Unloader	Tube
Laser	30W fiber laser	Features	High temperature test and room temperature test Re-test for reject tube
Vision inspection	Mold crack, marking, and leads		
Press	CAM press		

▶Process

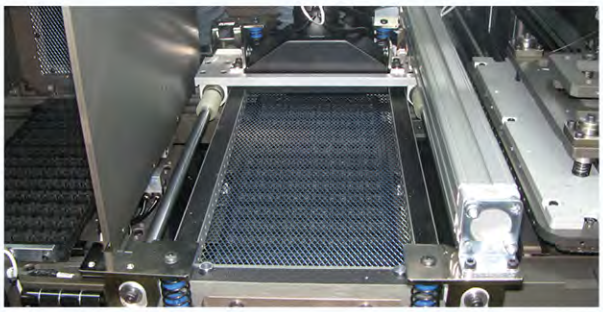
Magazine loading → Laser marking → Trim → Vision → Form → Pre-heating → Hot temperature test → Cooling → Room temperature test → Vision → Tube unloading

This is In-Line System including laser marking, trim, vision, form, and electrical test.

这台是包含 ‘激光标记、切筋成型、外观检查和电气检测’ 功能的联机设备。

Laser Application System

Intray Laser Marking System



Specification

Model	SLM-27T	Capability	Handling universal packages
UPH	More than 15,000 units	Sorting robot	3 axes controlled by servo motor
Tray size	JEDEC tray	Laser	30W fiber laser
Tray index	Servo motor controlled pitch movement	Vision	OCR & marking inspection

This Intray Laser Marking System is to mark on package surface in tray condition by automatic process. Pre-vision inspection (OCR) is done to prevent lot mixing before marking and post-vision inspection (marking) is done after marking. Both OCR reject and marking reject packages are sorted into a reject tray. Samil Tech Intray Laser Marking System is capable of handling all kinds of JEDEC trays.

这台In Tray激光标记设备是，自动对托盘内产品进行标记的的激光标记系统。
标记前进行OCR检查，以防止混批次；标记后进行M/K外观检查。
OCR不良和M/K不良，都被分选到不良托盘。
三一技术的 In Tray激光标记设备，可应用到所有JEDEC标准的托盘。

Laser Application System

Strip Laser Marking System

Specification

Model	SLM-24S	Pick & place	Servo motor driven vacuum picker
Application packages	TSSOP, TQFP, TSSIP, PDIP, etc.	Marking area	180 x 320mm
UPH	More than 1,500 strips	Vision	Orientation/type & marking inspection
Loader/ unloader	2 magazine stackers with an elevator	Conversion kit	Loader vacuum block

Strip Laser Marking System is the equipment to mark on package surface in strip condition by automatic process. Orientation and type inspection is done before marking and marking inspection is done after marking. Both reject strips are sorted into reject bins.
Samil Tech Strip Laser Marking System is capable of handling various devices.

Strip激光标记设备是，在框架中的产品进行标记的自动激光标记系统。
标记之前检查方向和类型；标记之后检查标记结果。
所有不量板条，都会分选到不良桶内。
三一技术的 Strip激光标记设备，能够处理各种类型的产品。

Laser Application System

Universal Laser Deflash System

Specification

Devices	Various molded leadframes	De-flash and suction zone	Chamber structure
Loader	Multi slot magazines	Air blow and suction	Before & after deflash
Unloader	Multi slot magazines	Conversion time	Within 10 minutes
Laser	30W fiber laser	Controller	PLC
Vision	Orientation & type inspection	Air	5~6 Kgf/cm2
		Dimensions (W x D x H, mm)	2,600 x 1,250 x 1,850

This system is for removing flashes on DBC (Direct Bond Copper) by fiber laser.
This system is designed with flexibility to handle various molded leadframes with minimum conversion parts. Once molded leadframes are loaded in slot magazine, they are moved to deflash zone and then, laser removes flashes on DBC in each package. After then, deflashed leadframes are automatically loaded in unloader slot magazine. Vision is installed for leadframe orientation and type inspection.

本设备利用光纤激光器，消除DBC（覆铜板）上的毛刺。
本设备具有通用性，使用极少的转换套件兼容各种模封过的引线框架。
首先，引线框架从槽盒移动到去毛刺区域；
然后，利用激光器消除每颗产品当中的DBC上的毛刺；
最后，框架自动推入到下料机槽盒内。
本设备具备外观检查功能，以检查引线框架的方向及类型。

Laser Application System

PCB Cutting & Connection System

Specification

Devices	Various leadframes & PCBs	Vision	Orientation & type inspection
Loader	Leadframe – multi slot magazine	Controller	PLC / PC
	PCB - stack magazine	Air	5~6 Kgf/cm2
Unloader	PCB connected leadframe – multi slot magazines	Dimensions (W x D x H, mm)	3,708 x 1,755 x 1,713
Laser	CO2 laser / UV laser with PRS system		

This system connects singulated PCB units to leadframes. PCB strips stacked in a magazine are transferred to a laser cutting station where they are singulated to a single PCB unit. The singulated units are moved to a cleaning and vision station. Then they are connected onto the leadframes and transferred into a slot magazine. The entire process is fully automatic.

本设备把分离后的PCB单元接合到引线框架。
首先，堆积料盒上的板条，将输送到激光切割区域分离成每颗单元；
然后，已被分离的PCB单元，进行冲洗清洁和外观检查；
最后，将接合到引线框架，推入到槽盒内。
设备全自动完成以上所有工程。

Test / Inspection System

Rotary Test Handler

Specification

Wide spectrum of packages	SOT, SOP, TSSOP, QFN, DFN, D2PAK, LED, MSOP
UPH	24,000 (idle running)
No. of Collet Chuck in Rotary Turret	48
Package Alignment	X & Y axis
Controller	PC
Air	5~6 Kgf/cm2
Dimensions (W x D x H, mm)	3,000 x 2,000 x 1,800

Rotary Test Handler is the multi-function system of “Rotary Turret Test (8station), Marking, Vision, Tape & Reel” with full features.
Rotary Test Handler is designed for easy maintenance by adopting functional module changes.

旋转测试分选机使具备 “旋转测试塔（8站）、激光标记、视觉检查、卷带功能”的多功能测试分选机。此分选机采用模块更换方式，便于维护使用。

Test / Inspection System

Flexible Test Handler

Specification

UPH	1,000 units (at 0~2 sec test time)	Features	Laser marking in chamber with dust collector and brush cleaning
Loading/ unloading	Tube or tray	Multi vision inspection	Marking, lead and package inspection.
Multi test function	Isolation test, AC/DC test	Auto reject bin sorting	Isolation reject bin, 8 AC/DC test reject bin, 3 vision reject bin
Maximum flexible interface with testers	GPIB, TTL, RS232		

This handler is integrated system of isolation test, AC/DC test, laser marking and vision inspection. It handles various packages by minimum conversion kit. Laser marking station has chamber structure with dust collector and brush cleaning. Vision performs multi function of marking, lead and package inspection. Reject packages are automatically sorted into related reject bins. Isolation reject package is sorted into a separate reject bin tube.
AC/DC test reject package is sorted into 8 reject bin tubes according to reject type.
Vision reject package is sorted into each marking, lead, package reject bin tube.

本设备是结合‘绝缘测验、交流/直流测验、激光标记以及外观检查’功能的测试分选机。
它通过更换最少的转换套件，兼容各种封装产品。
激光打标站是带集尘器和清刷功能的密室结构。
外观检查机具有多种功能，以检查标记、引脚、封装等状态。
不良品将自动分选到相应的不良桶内。
绝缘不良品，分选到不良料管；
交流/直流不良品，按不良类型分选到8条料管；
外观不良品，按 ‘标记、引脚、封装’不良类型分选到相关料管。

Test / Inspection System

Auto Vision Inspection System

Specification

Devices	All kinds of packages	Vision	6-side surface inspection with multiple cameras (according to inspection rule, sort NG items to 6 boxes)
UPH	More than 4,500 units		
Loader/ unloader	Tube-to-tube	Skew	Lead pin pitch & span correction
Sorting	6 NG box	Dimensions (W x D x H, mm)	2,600 x 2,300 x 1,970

This is an Auto Vision Inspection System.
Samil Tech designed this system for full surface inspection of the product.
Main inspection item: 1) missing part, 2) surface damage, 3) incorrect shape.
It has 8 cameras for inspecting 6-side surface, and 6 reject bins for sorting by reject type.
It also has skew tooling mechanism to meet high specification requirement.
This inspection system can be applied to all kinds of items, is not only confined to semiconductor packages.

这是一台自动外观检查机。
三一技术设计这台机，是为了检查产品的全表面。
主要检查项目：1) 部件缺失、2) 外观损伤、3) 形状不良。
它具备8个摄像机：检查产品的6面；具备6箱NG箱：按不合格类型分类。
它还具备整形机构，以满足高规格要求。
这台外观机可以应用到各种物品，不局限于半导体封装。

Test / Inspection System

Wire Loop Height Inspection System

Specification

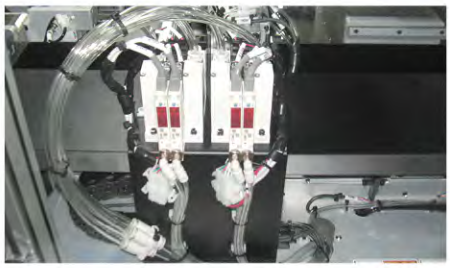
Test spec	Wire loop height inspection: ±50μm	Power	AC220V, 3 Phase, 60Hz
Chip height inspection	±10μm	Air	5~6 Kgf/cm2

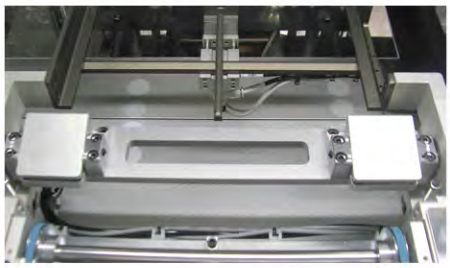
This equipment measures the height of wires bonded to the chip. Measure the height of the chip attached to the leadframe and the height of the wire loop connecting the chip and leadframe using a laser displacement sensor.

本设备用于测量芯片上键合丝的高度。
利用激光变位检测仪器测量：贴附在框架的芯片高度及芯片上键合的金丝高度。

MLCC System

MLCC Magnet Loading System





Specification

Controller	PLC	Air	5~6 Kgf/cm2
Power	AC220V, 1 Phase, 60Hz, 15A	Dimensions (W x D x H, mm)	1,650 X 900 X 1,815

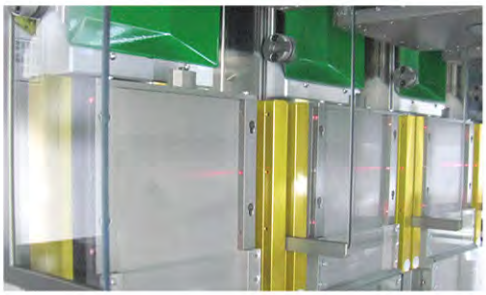
▶Process
Carrier plate loading to magazine → MLCC loading to reservoir →
Carrier plate move to reservoir → Magnet down & X,Y move →
MLCC loading to carrier plate → Carrier plate reversal →
Roller pressing → Carrier plate unloading to magazine with MLCC inserted.

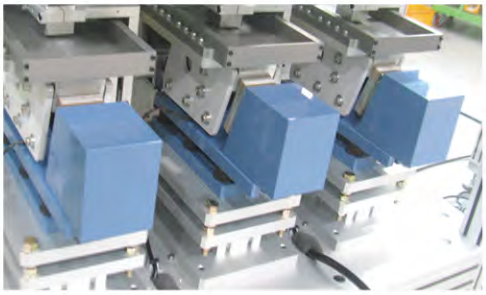
This equipment uses magnetic force to place MLCC (0402~1005) on the holes of a carrier plate, press them with roller press and insert them at a constant height.

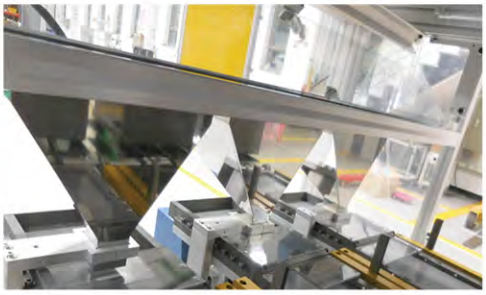
本设备利用磁力将MLCC(0402~1005)放在承载板上的孔中，
利用辊压机将其按压并以恒定的高度插入。

MLCC System

MLCC Sorting System







Specification

Power	AC220V, 1 Phase, 60Hz, 15A	Weight	Approx. 500 Kg
Air	5~6 Kgf/cm2	Dimensions (W x D x H, mm)	1,000 X 1,060 X 1,830

▶Process

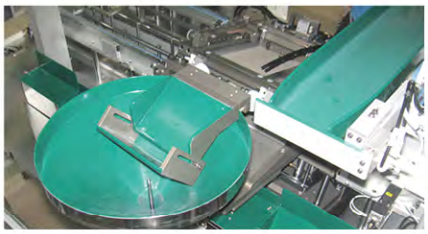
MLCC loading to hopper → MLCC move to hole plate location →
Magnet box move to the hole plate position → Magnet down & X,Y move →
MLCC attached to the bottom of magnet box → Magnet box move to MLCC unloading tray →
Magnet rise in magnet box → Selected MLCC drop to unloading tray.

This equipment is a facility to separate MLCC and foreign material by using magnetic force.
MLCC can be sorted by length using double hole plate.

本设备通过磁力从MLCC中分离异物的设备。
MLCC可以使用双孔板，按长度分类。

MLCC System

MLCC Loading & Press System



Specification

Power	AC380V, 3 Phase, 60Hz, 50A	Weight	Approx. 3,000 Kg
Air	5~6 Kgf/cm2	Dimensions (W x D x H, mm)	2,628 x 2,097 x 1,940

▶Process

Carrier plate loading → Loading plate connection → MLCC loading →
Tilt & vibration → Press → Loading plate separation →
Carrier plate unloading with MLCC inserted.

This equipment is MLCC Loading & Press System.
Place the MLCC, in the holes of the carrier plate and press them to insert them at a constant height.

本设备是MLCC加载&压机系统。
将MLCC放在承载板的孔中，并利用压机按一定常数将其插入。

Others

Ultrasonic Flux Cleaning System

Specification

Devices	SPM, APM, EPM leadframes	DI water temperature	Controllable from room temperature to 60℃ within 15 minutes
Cycle time	Cycle time : 5 min/basket	Dry tank	Air temperature, time adjustment up to 100℃
Process	Basket loading → DI water cleaning1 (ultrasonic) → DI water cleaning2 (ultrasonic) → Agitation rinse → Final rinse → Hot air drying → Basket unloading	Ultrasonic power & frequency	1,500W, 40KHz
		Features	Equipped with automatic DI water filling sensor, flow meter and DI water resistivity sensor/monitor for each tank

This system is designed to remove flux on leadframes by using ultrasonic wave. Once a basket full of leadframes is loaded in loading conveyor, the basket automatically passes through two ultrasonic cleaning zones, two rinsing zones, two dry zones and then, leadframes in the basket are ejected to unloading conveyor on the condition that flux is completely removed. During cleaning process, purity of a cleaning fluid (solution) can be detected. When purity level reaches at set parameter, cleaning fluid (solution) is changed automatically.

这台机是为利用超声波清除引线框架上的助焊剂而设计的。
装满框架的篮筐从上料输送带加载，篮筐将自动通过2个超声波清洗区、
2个冲洗清洁区、2个干燥区，在完成清除助焊剂的框架将退出到下料输送带。
在清洁工作当中，可以检测到清洗液(溶液)纯净度。
当纯净度达到设定参数时，将自动更换清洗液(溶液)。

Others

Wire Bonding Handler

Specification

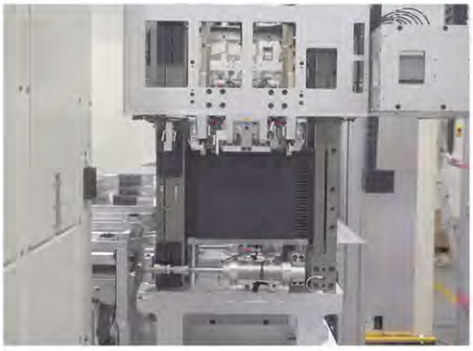
Power	AC220V, 3 Phase, 50Hz, 30A	Bonder	Asterion
Air	5~6 Kgf/cm2	Dimensions (W x D x H, mm)	7,000 x 1,700 x 1,800

This facility is a Wire Bonding Handler, connecting three wire bonding heads in series and handling each wire bonding machine to divide the bonding work into one leadframe.
Six DBCs are bonded to one leadframe. The first bonder is to bond three DBC signal leads to one leadframe and the second bonder is to bond the other three DBC signal leads.
The last bonder will bond the power leads of six DBCs. The leadframe is discharged after the vision inspection.

本设备是引线键合设备。
3台键合机将直列连成，可对每台机分配不同工作分工完成键合工作。
一条框架上将键合6颗DBC。
首先，第1台键合机，键合3颗DBC的信号端；
其次，第2台键合机，键合剩余3颗DBC的信号端；
然后，第3台键合机，对已完成键合信号端的6颗DBC，键合供电端。
最后，产品将经过外观检查，并将其推入到料盒完成工作。

Others

Auto Bake System



Specification

Power	AC220V, 3 Phase, 50Hz, 50A	Bake Oven, Cooler	Need separate installation
Air	5~6 Kgf/cm2	Dimensions (W x D x H, mm)	9,600 x 2,700 x 3,300

This equipment is the semiconductor package baking system. JEDEC trays with semiconductor packages are loaded through the logistics conveyor (3 to 65 tray). The handler heats the packages in the designated bake chamber according to the quantity of the tray. Packages that have gone through the baking process are automatically discharged and moved to the cooler to go through the cooling process. Packages that have completed the cooling process are automatically discharged to the logistics outlet conveyor.

本设备是半导体产品烤箱系统。
装有半导体产品的JEDEC托盘将流入到物流输送带（3~65盘）。
设备按照烤箱内的托盘数量，进行烘烤工作。
完成烘烤工作的产品，将自动退出烤箱流向冷却工位。
完成冷却工作的产品，最后流出到物流输送带。

Others

Auto Banding System

Specification

Power	AC220V, 3 Phase, 50Hz, 30A	Weight	Approx. 5,000 Kg
Air	5~6 Kgf/cm2	Dimensions (W x D x H, mm)	8,700 x 2,800 x 2,000

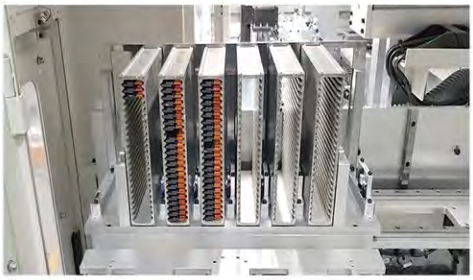
Tray loading → RFID reading → Tray count → Tray split → Remove RFID
→ Cover tray loading → Vision inspection → Label loading → Banding
→ Sorting conveyor unloading

This equipment is an automatic tray-banding system. When maximum 65 JEDEC trays containing semiconductor packages are loaded, the system releases the trays after banding them in a set amount.

本设备是，自动托盘捆绑系统。
当装有半导体封装的JEDEC Tray，以批次单位(最多65张)加载到系统中
根据从服务器接到的信息，设备将以所需Tray数量进行捆绑完成工作。

Others

Potting System



Specification

Device	TO220FP 3LD	Device UPH	– Number of axis : 3–axis – Speed : 0.1 to 500 mm/sec – Accuracy : ± 0.02 mm – Dispensing valve : 5 valve + tank
UPH	10,000 units		
Loader	Magazine & L/F elevator and L/F pick & place (gripper)	Dust collector	1 HP
Unloader	Cassette	Controller	PLC
Index	AC servo motor	Air	5~6 Kgf/cm2
Power	AC220V, 3 Phase	Dimensions (W x D x H, mm)	1,600 x 1,250 x 1,700

This equipment is designed to dispense liquid epoxy on supporting pin position of TO220FP package to prevent electric problem caused by metal exposure in the pin holes.

本设备是为防止金属外露引起的电气问题，在TO220FP的支撑钉上涂抹液态环氧树脂而设计的。

Others

Tray Filling System

Specification

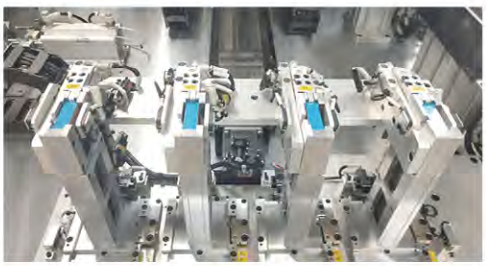
Model	FLM-212	Unloader	Full / empty / reject tray
UPH	More than 1,400 units	Features	Front in loading and front out unloading
Loader	Partial / empty tray	Picker	8-para picker / 10-para (option)

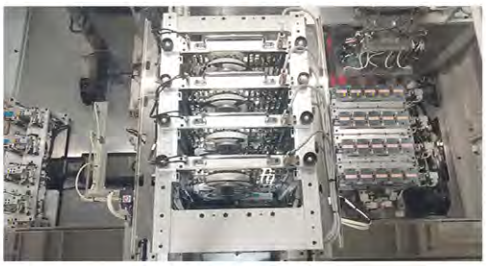
This equipment makes partial tray into full tray by filling empty pockets with good devices for next process.

本设备是为下一道工程，在未满托盘的空穴填满产品的设备。

Others

Fin(Thermal Sheet) Attaching System





Specification

Devices	All kinds of leadframes	Power	AC220V, 3 Phase, 50Hz
UPH	950 units	Air	5~6 Kgf/cm2
Loader/ unloader	Cassette-to-cassette	Dimensions (W x D x H, mm)	3,300 x 2,000 x 2,250
Controller	PLC		

This is a Fin Attaching System that uses heating press to attach the fins to the leadframe. Leadframes are loaded from cassette and gone through the pre-heating stage. Fins are loaded from fin stacker and the protecting films are removed with tape mechanism[uses adhesion of tape], then fins are preheated and transferred to the heating press. It uses the heat energy and pressure of the heating press to attach fins on leadframe, finally unload it into the slot magazine to finish work.

这一台设备是利用加热压机，把散热片贴附到引线框架的散热片贴附系统。
引线框架从槽盒加载并经过预热区域，到加热压机等待；
而散热片从支架加载，由胶带机构去除保护膜[利用胶带的粘性]，
之后散热片经过预热后，输送到加热压机。
利用加热压机的热能，压力把散热片贴附到引线框架，最后将其推入到料盒结束工作。

Factory Automation

Tape & Reel System with Auto Reel Changer

Specification

Power	AC220V, 3 Phase, 60Hz, 50A	Controller	PLC
Air	5~6 Kgf/cm2	Dimensions (W x D x H, mm)	2,500 x 1,550 x 2,150

This system is to pick a part supplied from either previous machine or bowl feeder and place it on inlet rail. The part is put into empty pocket of carrier tape by picker. Reel of carrier tape can be loaded up to 10 reels at loading zone and reel can be replaced fully automatically.
After parts are loaded into the pocket. sealing tape is adhered on the top of carrier tape. At the end of reel, masking tape is used to fix roll of tape. Like loading zone, 10 reels can be loaded at unloading zone. Capacity of the system is 4,500 units per hour.

设备从前道设备或振动盘供料器中获取零件，并将其放置于入口轨道上。
然后，真空取放器把零件放入到载带卷中的空穴。
当零件装入空穴里后，密封胶带将黏在载带的上面；
在载带卷的末端，利用遮盖胶带固定住卷盘。
上，下料机可以装载10卷载带，而且可以全自动替换。
设备的工作能力是，每小时4, 500颗。

Factory Automation

Encoder Assembly System

Specification

Device	Straight, Form, HP type encoder	Composition of equipment	– Bowl feeder & linear feeder – Holder, Lens, EI, Pic inserting unit – Hot testing unit (over 80℃) – Room temperature testing unit – Reject sorting unit – Automatic tray packing unit
UPH	3,000 units		
Power	AC220V, 3 Phase		
Dimensions (W x D x H, mm)	4,000 x 3,000 x 1,800		

This is an Encoder Assembly System.
An encoder is a photo sensor, which is used in printers, copy machines, office supplies, automobiles, etc. Typically, encoders are manufactured manually.
However, with this equipment, encoders can be automatically manufactured. This inline system automatically supplies and assembles all the parts of encoders, tests the electrical properties at high and ambient temperature condition, sorts out the defectives from manufactured products, and packs the proper products on the tray.

本设备是自动编码器装配机。
编码器是用在打印机、复印机、办公用品以及汽车等产品的光电传感器。
编码器过去通常都是，以手工完成装配的。
然而使用这台自动装配机，可以自动完成编码器的装配。
这台联机设备可将编码器所需的所有零部件自动供应，完成自动装配；
再经过电气和常温/高温测验，根据检测结果分选正常与不良；
最终将其摆放到专用托盘内完成包装。

Factory Automation

Pin Insert System

Specification

Equipment type	Automatic	Unloading	Tray stack
Sequence	Connector loading in bowl feeder → Pin loading in reel → Pin insert & form → Test → Tray unloading	Controller	PLC
		Power	AC220V, 3 Phase, 50/60Hz
UPH	450 units	Air	5~6 Kgf/cm2
Loading	Bowl feeder for body / reel for pin	Dimensions (W x D x H, mm)	10,550 X 1,250 X 2,100

Samil Tech designed this system to automatically assemble the press-fit pin connector. Pins are supplied by reel. First, the pins are separated and inserted into the connector holes of the body. After insertion, they are bent by tool. They are sorted into good and reject based on vision inspection, a DC test and a high voltage test. The good ones move to the packing station to finish work.

三一技术设计这台机，是为了自动完成连接器的压接装配。
针以卷轴状态供应到设备。
一开始，把针切割分离并插入到连接器的空洞；
压接后，通过机械加工机构完成折弯工作。
然后，根据设备上的外观检查、电气功能测验结果；
分选正常与不良，正常品将输送到下一道包装工位。

Factory Automation

Pedal Assembly System

Specification

Sequence	Pedal arm/case manual loading → Assembly (11 items) → Electrical test → Laser Marking → Unloading to table	Controller	PLC
		Power	AC380V, 3 Phase, 50Hz, 50A
		Air	5~6 Kgf/cm2
UPH	240 units	Dimensions (W x D x H, mm)	13,200 x 5,600 x 1,900

This assembly system is used for assembly and inspection of the accelerator pedal.
Except the manual operation of loading / unloading, the equipment can perform fully automatic assembly, vision inspection, laser marking and production management.
Its functions include: Product transportation, accessories assembly, hot riveting, screw fixation, vision inspection, electrical testing, laser marking, etc.

本设备用于汽车油门的装配及检测。
除了上下料的手动操作以外，可以接连完成装配、成品检测、激光标记、生产管理。
其功能包含：产品输送、配件装配、热铆固定、螺钉固定、外观检查、电气检测、激光标记等。

Factory Automation

Test System for Power Window Motor Controller

Specification

Tact time	10 sec	Power	AC 220V or 380V, 3 Phase
Loader	5 boxes in cart	Air	5~6 Kgf/cm2
Unloader	5 boxes in cart	Dimensions (W x D x H, mm)	7,100 x 2,440 x 1,900

This is a test system for a controller which is used for power window motor of vehicle. When a box containing controllers is loaded, robot gripper picks up the controller from the box and places it in assembly station, where top assembly and bottom assembly are combined. Then, the assembled controller moves to a leakage test station. After the leakage test station, functionality test of each controller is conducted to see work with power window motor. There are total 8 of functionality test stations. When the controller passes the test, it is placed in unloading box after printing label on it.

本设备是，用于检验汽车电动窗控制器的检测设备。
当把装有控制器的料箱装入到上料机构；机械手将从料箱中取出控制器，摆放到装配工站。
在装配工站（转盘）把上总成和下总成相结合后，对此进行气体泄漏测验；
再转移到检测工站（设备主体）。检测工站总共有8块功能一致的测试位：
首先，在测试位把电动车窗电机和控制器相结合后，对此进行功能检测；
然后，在通过功能测试的正常控制器上贴上打印出的标签；最后，将其放置于料箱内。

Factory Automation

Sunroof Assembly Line

Specification

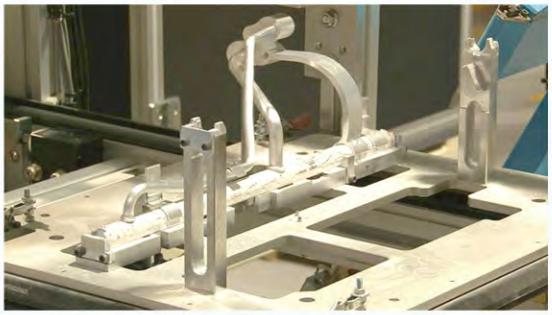
Type	TVS, Panorama
Configuration	– Frame cell : stand alone type, auto clinching & self piercing function – Assembly cell : manual station, turn table, conveyer system, elevator – Test cell : operation test, safety function test – Glass setting machine : A-frame clamp module, glass setting block, glass clamp module

Samil Tech's Sunroof Assembly Line assembles parts and components related to sunroofs as well as test the completed assembly.

三一技术制作的汽车天窗生产线，装配相关天窗的零部件；
并对完成装配的天窗总成进行测试。

Factory Automation

Header Condenser Assembly Line



Specification

UPH	240 units	Dimensions (W x D x H, mm)	– Line 1 12,000 x 6,600 x 2,400 – Line 2 12,000 x 6,600 x 2,400
Controller	PLC, PC		
Power	AC220V, 3 Phase, 60Hz		
Air	5~6 Kgf/cm2		

This is an assembly line that automatically assembles the header condenser required by an automobile's cooling system.

这是一台自动装配汽车冷却系统所需部件的，冷凝器自动生产线。

Factory Automation

Radiator Cap Assembly System

Specification

1> System specifications

UPH	680 units		
Composition of equipment	– Radiator cap assembly unit – Bottom assembly Unit	– Testing unit (Weight & pressure) – Labeling unit – Packing unit	
Power	AC220V, 3 Phase	Dimensions (W x D x H, mm)	7,260 x 3,700 x 1,900

2> Vision system specifications

FOV	45mm x 60mm	Inspection accuracy	2 pixel
Label size	40mm x 40mm	Repeatability	Min. 99%
Image resolution	0.03mm / 1pixel	Performance	300msec / unit

3> Test & labeling specifications

Air injection flow rate	600~800 cm3/min
Opening variable pressure test	0.4~1.5 Kgf/cm2
Sealing pressure test	Over 2.5 Kgf/cm2
Labeling position accuracy	± 0.4mm

This is a Radiator Cap Assembly System that automatically assembles the 14 parts of a radiator cap. After assembling the parts, this in-line system tests the weight and pressure of the products, labels them and automatically packs them in a tray.

这是汽车水箱盖装配设备，完全以自动化装配由14个零部件组成的水箱盖。
这台联机设备在完成装配后，测验产品的重量以及压力，再贴上产品标签。
最后，将自动把水箱盖放入托盘内。

Suture Thread Inserting System

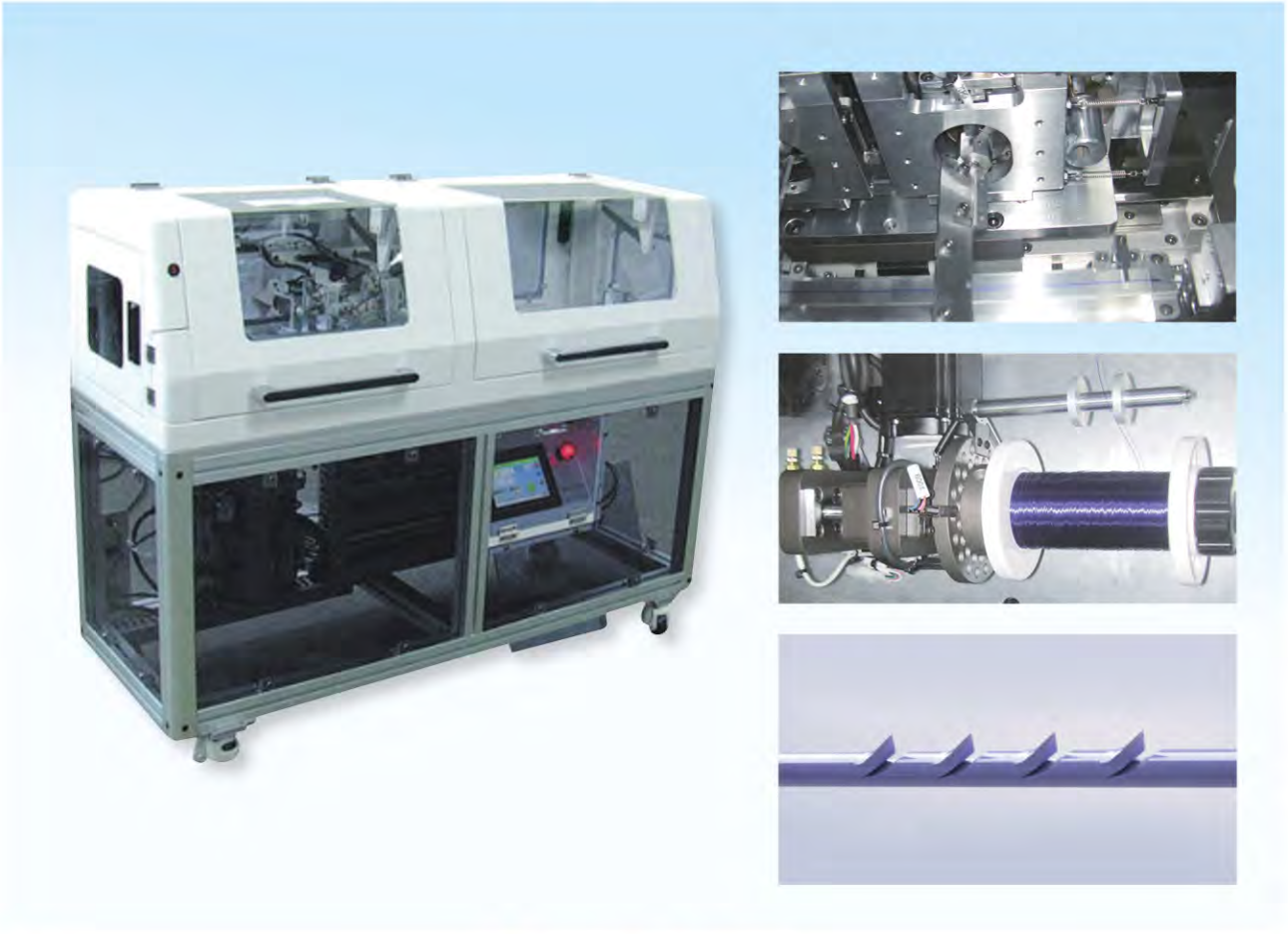
Specification

▶Process
Needle feeder → Pick & place to turn table → Needle cap off → Vision inspection (Good/Reject, Orientation) → Needle align → Suture thread insert → Sponge pick & place through the needle with needle rotation → Vision inspection (Pass/Fail) → Needle cap on → Bulk box sorting

This system is to insert suture thread into a needle.
After inserting the suture thread to the needle, the same length of the suture thread outside of the needle is fixed with a sponge. By rotating the needle at the same time as the sponge insertion, the suture thread outside is winding out of the needle in a spiral. Suture thread is loaded in roll form, needles are supplied by bowl feeder and sponges are supplied by XY table.

本设备把倒刺线自动插入到针头孔内。
设备把倒刺线以固定深度插入到针头，使针头内、外的倒刺线长度相同；
当完成插入倒刺线后，会利用海绵固定住针头和倒刺线。
在插入海面的同时旋转针头，使针头外的倒刺线以螺旋形状固定在针的外表面。
缝合线原丝由卷轴；注射针头由振动盘供料器；
海绵由X, Y方向活动平台，自动供应到设备。

Suture Thread Barbing System (Blade Horizontal Type)



Specification

Loading	Roll	Air	5~6 Kgf/cm2
Unloading	Bulk box		
Power	AC220V, 1 Phase, 60Hz	Dimensions (W x D x H, mm)	1,300 x 600 x 950

This system is a horizontal type of suture thread fabrication which can make cogs on suture thread.
Usually, this suture thread is used in face lifting.
Cutting tool is able to make cogs in different shape, angle, depth, and length.
Rotator which is installed in the machine can turn suture thread in 90 degree and make cogs.

这台水平刀片式倒刺形成机，使用在面部提升除皱的缝合线上形成倒刺。
把一定长度的缝合丝放入工作台后，
利用切割刀组形成，各种不同形状、角度、大小和长度的倒刺。
该机台与过去设备不同；它还具备了旋转机构，可以在90° 位置形成倒刺。

Health-Care

Suture Thread Barbing System (Blade Vertical Type)

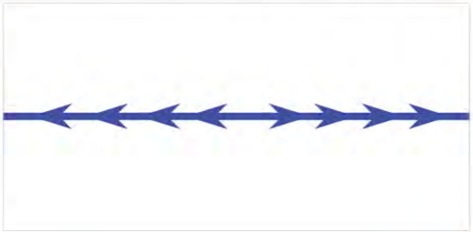
Specification

Loading	Roll	Air	5~6 Kgf/cm2
Unloading	Bulk box		
Power	AC220V, 1 Phase, 60Hz	Dimensions (W x D x H, mm)	850 x 1,200 x 1,850

This system is to make barbs in various types on suture thread with suture running down in vertical direction. Barbs are made in different shape, angle and size with cutting tool rotating 0 degree, 120 degree, or 240 degree.
When creating barbs, cutting die is placed in opposite side of cutting blade. Comparing to the existing vertical type of suture thread barbing system, suture length extends to 600~700mm.

本设备是为防止缝合线松脱，在缝合线上形成各种形状的倒刺。
缝合丝以垂直下降时，通过旋转切割刀组以0°、120°、240°方向旋转；
切割形成按需定制的各种形状、角度、大小的倒刺。
在切割形成倒刺时，刀片与另一侧刀座相结合为一体，支撑着刀片旋转。
与过去的垂直刀片式形成机相比，本机可以把缝合丝长度大幅延长到约600~700mm。

Suture Thread Barbing System (Press-Type)



Specification

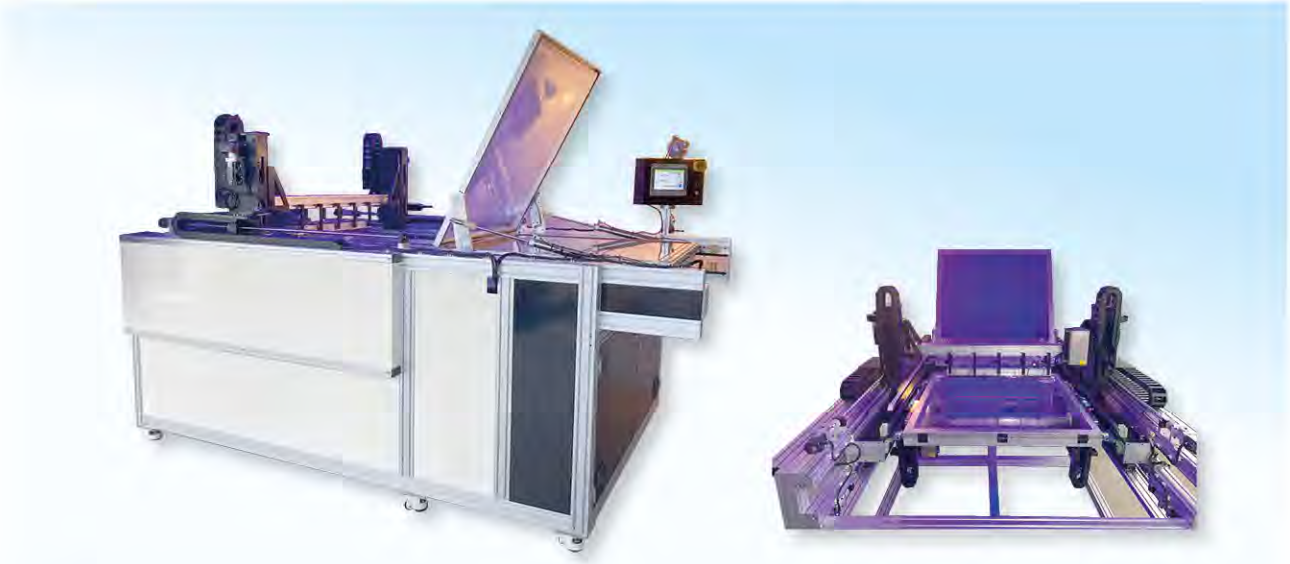
UPH	More than 150 units (L=170mm)	Loading	Roller
Pitch between barbs	2mm	Unloading	Bulk box or roller
Suture thread length with barbs	50mm ~ 1 roll	Power	AC220V, 3 Phase, 60Hz
Applicable suture diameter	0.38 ~ 0.6mm	Air	5~6 Kgf/cm2
		Dimensions (W x D x H, mm)	1,600 x 600 x 1,800

This press-type suture thread barbing system is designed to create barbs on a suture thread.
The suture thread with barbs are usually used for face lifting and surgical operation.
Comparing to a blade-type system creating barbs, this press-type system has a great advantage such as higher productivity, longer thread, barb quality and punch life time over blade.

设计这台压机式倒刺形成机，是为了在缝合丝上形成倒刺。
倒刺缝合丝，通常用于面部提升除皱和外科手术。
相比刀片式倒刺设备，压力式设备有很大的优势。
（例如：效率更高、长度更长、倒刺品质稳定，刀具寿命更长）

UV LED Lithography

UV LED PCB Exposure System



NO	ITEM	UV LED PCB Exposure System
1	Dimensions (W x D x H, mm)	2,156 x 3,285 x 2,000
2	Weight	2,000 Kg
3	Power	AC220V 3 Phase, 50/60Hz, 20kW
4	Air	5~6 Kgf/cm2
5	Working Condition	Temperature (22~23℃), Humidity (55~65%)
6	PCB Size	Max 814 x 1,100 mm
7	PCB Thickness	0.05 ~ 3.3 mm
8	Exposure Field	814 x 1,100 mm
9	Exposure Method	Double-side Scanning Exposure Type
10	Light Source	UV LED Module
11	Light Source Lifetime	More than 20,000 Hours
12	UV Intensity	365nm : Max. 180 mW/cm2 / 405nm : Max. 300 mW/cm2
13	Uniformity	Approx. 90%

This system uses UV LED light source. Its light source supports both 365nm and 405nm wave length in one light source. Two light sources exist in the equipment in order to expose top and bottom of PCB. The length of light source bar is 814mm and it can scan and expose up to 1,100mm. The height of light source, scan speed and light density can be adjusted by parameter setting. This system is semi-automatic and controlled by PLC program.

本设备是，利用紫外光源[UV LED]的中大型PCB曝光机。
利用由365nm和405nm搭配的，组合式光源双面曝光方式。
光源长度为814mm；利用扫描式曝光功能，可以完成长达1,100mm的曝光工作。
本设备是由PLC控制的半自动设备，可以通过变更参数调整：光源高度、扫描速度、曝光密度。

UV LED Lithography

UV LED Micro-Lithography System

Specification

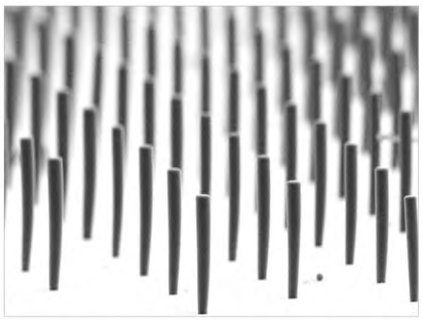
NO	ITEM	UV LED Micro-Lithography System
1	Dimensions (W x D x H, mm)	2,500 x 1,100 X 1,700
2	Power	220/380V, 50/60 Hz, 3 Phase, 40A
3	Substrate Size	Piece to 6 inch
4	Light Source	UV LED : 365nm, 405nm & Dual Module
5	Optical Intensity	Max. 200 mW/cm2
6	Uniformity	Approx. 95%
7	Lamp Lifetime	20,000 Hours
8	Stage	Tilt : -90° ~ 90° / Rotation : 360° (cw, ccw)
9	Other	Dimming Control

The advanced UV LED Micro-Lithography System has been introduced for fine 3D microfabrication. The computer-numerical-controlled (CNC) system has advanced not only the 3D light mask aligning capability by tilt-rotational sample holder movement but also an exceptional light intensity by simplified direct exposure design. The CNC UV-LED system programmably introduces tilt-rotational UV light through the aligned photomask via sequential exposure of a synchronized switchable UV light source. This user-definable 3D light traces enables the new 3D microstructures where the scale of the structure can range from submicron to several millimeter sizes. Dynamic 3D microstructures have been fabricated and presented on the next page.

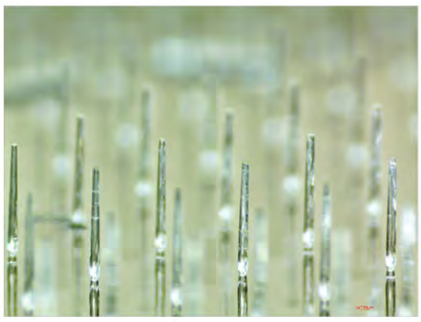
这台机是为了3D微制造加工，而研发的先进紫外光曝光机[UV LED Micro-Lithography System]。
本设备的UV光系统：通过倾斜旋转样品夹具对样品依次照射UV光，
制造出各种各样的3D微结构的3D微加工设备。

Pillar

Ø : 20㎛
A/R : 10

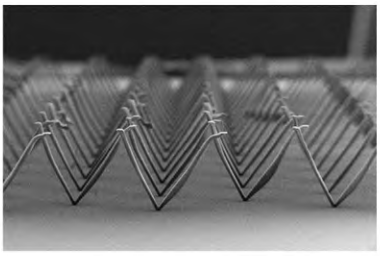


Height :
2000㎛

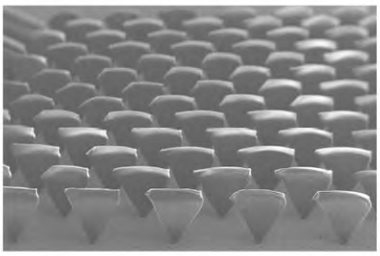


3D Patterns

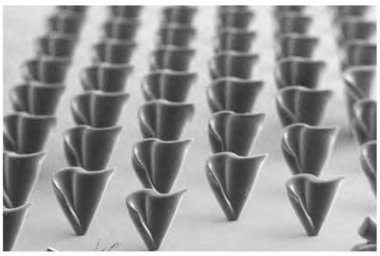
V-Shape Array



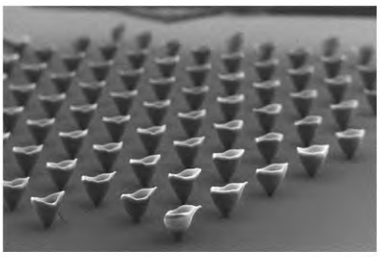
Triangle Array



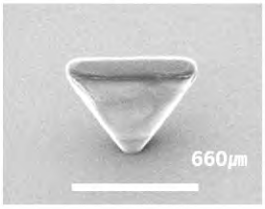
S-Shape Array



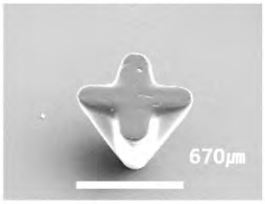
Horn Array



(a)



(b)



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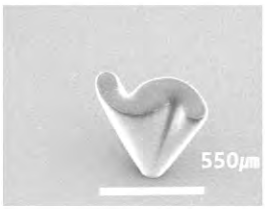

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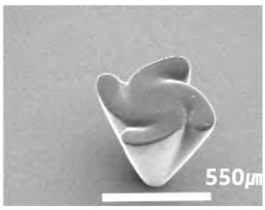

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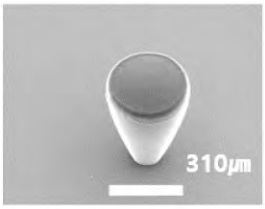

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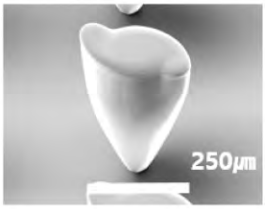
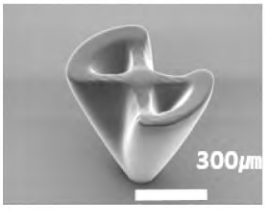


(g)



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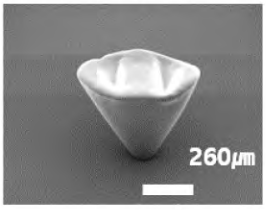

(a) Vertical reverse triangular slab
(b) Quadruple triangular slab
(c) Screwed wind vane with double blades
(d) Screwed wind vane with quadruple blades
(e) Horn
(f) S-shape horn
(g) Bowtie horn
(h) Double horn

State-of-the-Art Technology

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