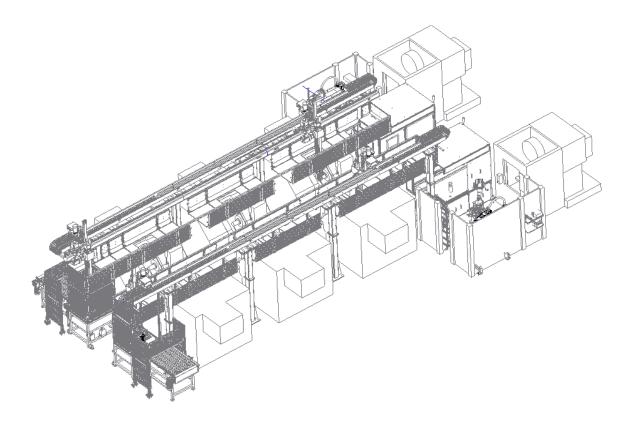


General Catalog: GC2024001_E

Smart Manufacturing Machines



Flexibility, Modularization, Standardization, DXization Equipment & Process Total Engineering at One-stop Smart Solution

KTI CO., LTD / JAPAN KTI Semiconductor Manufacturing Machine Co., Ltd / CHINA KTI Intelligent Machine Manufacturing Co., Ltd / CHINA





First One

Founded in 2005, KTI is a high-tech manufacturer of automated manufacturing machinery integrating R&D, design, manufacturing and sales.

KTI focuses on the development and manufacture of robot integration equipment, various types of high-speed transfer machines for the mechanical and electronic industries, electronic substrate assembly manufacturing, and equipment for automation and intelligent production in other manufacturing plants, as well

as the provision of digital total solutions and system construction.

KTI provides a wide range of advanced standardized and non-standard automated manufacturing equipment for automotive parts manufacturing, semiconductor electronics manufacturing, flat-panel display manufacturing, home appliance manufacturing, and other world-class corporate clients' production factories around the globe.

KTI's core corporate culture is "First One, Best One, Only One". The company has a wealth of talent and experience in the industry. We have developed, designed, and manufactured thousands of advanced industrial automation equipment. Many of them are the first set of equipment in the industry and have won many awards and intellectual property rights.

KTI emphasizes technological R&D, technological innovation, personnel training, and international cooperation between industry, academia, and research. The company has a Technology R&D Centre in Suzhou, China. and a KTI-University of Electronic Science and Technology Research Centre for Smart Manufacturing in China. KTI is a leading international high-tech enterprise in the field of intelligent manufacturing.

Best One

Only One



KTI is a National High-Tech Company in China



Company Philosophy:

We aim to be an international, innovative company that contributes positively to the progress of society based on the happiness of all employees.

KTI's team of engineers respects creative work, the intellectual property of our clients, and the importance of knowing that property in our daily work.

Company Profile:

	Company name:	KTI Co., Ltd / JAPAN	
	Group company:	Suzhou KTI Semiconductor Manufacturing Machine Co., Ltd / CHINA	
		Nantong KTI Intelligent Machine Manufacturing Co., Ltd / CHINA	
		Zhuhai KTI Intelligent Machine Manufacturing Co., Ltd / CHINA	
	CEO:	Dr. Jianping Jing	
	Founded:	Nov. 2005	
	Capital:	49 million RMB	
	Head Office:	B13, Xinhua industry park, No.2, Shuangma Road, Suzhou city, R.P. China	
Tel: 86-(0) 512-6295		95-9517 Fax: 86-(0)512-6296-9317	
	http://www.kti-machine.com		
	mail: sales@kti-machine.co.jp		

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DX Intelligent Space Management System based on the Cloud Platform	— Page 20

KTI Semiconductor Manufacturing Machine Co., Ltd

Add: B-13, Xinghua Industrial Park, No.2 Shuangma Road, Suzhou Industrial Park, Jiangsu Province, P.R. China Tel: 86-(0) 512-62959517 Fax: 86-(0) 512-62959317

KTI Intelligent Machine Manufacturing Co., Ltd

Add: Building 6, Hengrong Industrial Park, Jinqiao West Road, Tongzhou District, Nantong City, Jiangsu Province, P.R. China Tel: 86-(0)512-62959517 Fax: 86-(0)512-62959317

KTI CO., LTD / JAPAN

Add: ParkHomes-Meguro 902 #, 2-23-23, Shimomeguro, Meguro-ku, Tokyo, Japan. 153-0064 Tel: 81-(03) 34910685 Fax: 81-(03) 34910681

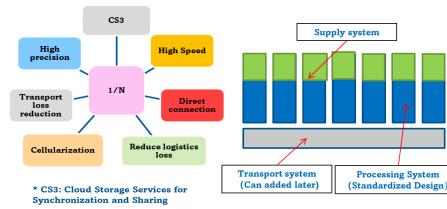
KTI CO., LTD / Zhuhai, China

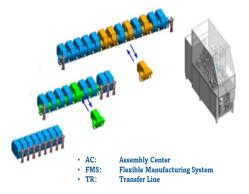
Add: Room332, Building 18, No.1889, Huangdao East Road, Innovallay HQ, Hengqin New Area, Zhuhai, Guangdong Province, P.R. China Tel: 86-(0) 756-8688985

http://www.kti-machine.com



The KTI' Concept of Flexibility, Modularization, Standardization



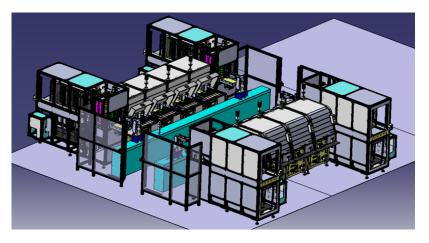


Overall planning (three steps):

1. Processing unit standardization

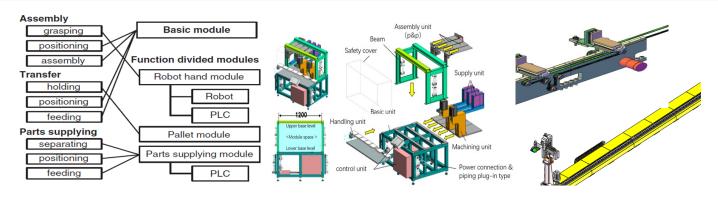
2. Transfer automation

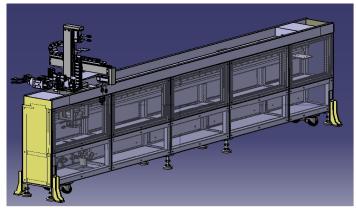
3. Factory DXization

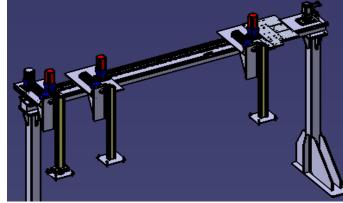


KTI puts forward the unique line innovation of KTI based on the standard equipment design idea of systematization, modularization, and flexibility in terms of customer investment, equipment design, and manufacturing.

Design of functionally divided modules and standard unit equipment



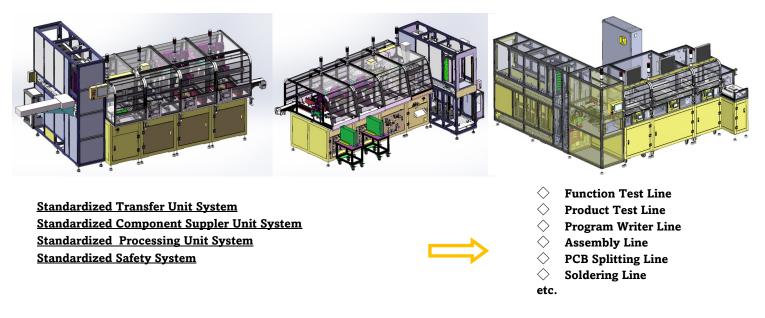






Series of Modular Machines for PCB Assembly Manufacturing

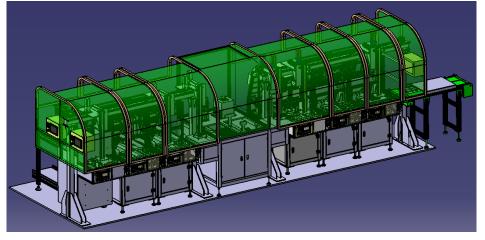
One-stop solution for PCB assembly factory : Flexibility, Modularization, Standardized processing



Ex: PCB assembly DIP section automated production line outline diagram

(* 5800mm) L : Max < 6000mm 1600mm 600mm 600mm 600mm 600mm 600mm 600mm W: Max < 2000mm Ć A5 Α9 A2 A3 Α4 A6 Α7 Α8 A10





- A1, A10: Gantry type ATS robotic line
- A2: PCB cassette loading/unloading
- A3: Shaped parts insertion machine-1
- A4: Shaped parts insertion machine-2
- A5: Selective wave soldering
- A6: Program writer
- A7: PCB substrate splitter-1
- A8: PCB substrate splitter-2
- A9: Unloader convey



Off-line Type Semiautomatic PCB Splitting Machine



AM455-02(Type I)

2. Functions:

1. General Standards:

Equipment model: Equipment size: Equipment weight: Spec voltage: Spec power: PCB size: **PCB material:** Milling cutter diameter: **Repeatability:** Cutting speed: Moving speed: Z-axis stroke: Head rotation speed: X, Y, Z axis: Air supply pressure: Air consumption:

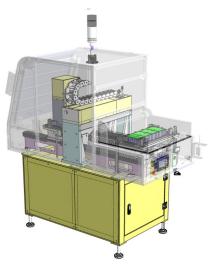
AM455-02(Type I) 850mm(L)*850mm(W)*1500mm(H) 200KG **03 AC380V 50HZ** 3kw 400mm(L)*350mm(W)*3mm(H) FR4, cem1, cem3 and other resins $\varphi 0.8 \sim \varphi 3.0 \text{mm}$ ≤±0.01mm Max.100mm/s Max.1000mm/sec Max.70mm 5000-60000rpm AC Servo(KTI Standard Module) above 0.4MPa 20-30L/min(A.N.R)

Automatic adjustment of the depth of the milling cutter (automatic gear change), extending the cutting life of the milling cutter; Optional modules: automatic tool change, dust collection, automatic scrap discharge, dust extraction switch, etc.; Image processing can correct the cutting position and improve the cutting accuracy; The image module can read QR 2dimensional code, and automatically transfer the corresponding cutting program.

3. Main Components:

High-precision servo module, image module, cutting module, etc.

Standard Type PCB Splitting Machine (AICHAN-II)



AICHAN-II (Standard Type)

1. General Standards: Equipment model: **Equipment size:** Equipment weight: Spec voltage: Spec power: PCB size: PCB material: Milling cutter diameter: **Repeatability:** Cutting speed: Moving speed: Z-axis stroke: Head rotation speed: X, Y, Z axis: Air supply pressure:

AM455-02(AICHAN-II) 1250mm(L)*600mm(W)*1500mm(H) 200KG φ3 AC380V 50HZ 3kw 330mm(L)*250mm(W)*3mm(H) FR4, cem1, cem3 and other resins φ0.8~φ3.0mm ≤±0.01mm Max.100mm/s Max.100mm/s Max.100mm/sec Max.70mm 5000-60000rpm AC Servo(KTI Standard Module) above 0.4MPa

2. Functions:

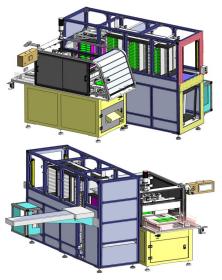
In-line/off-line dual-machine mode; suitable for multi-variety and small-scale production, and expandable models; automatic matching of preset work procedures; expected planning of overall factory automation solutions; automatic adjustment of milling cutter depth (automatic shifting), extending milling cutter Cutting life; optional modules: automatic tool change, dust suction, automatic chip removal, dust suction switch, etc.

3. Main Components:

High-precision servo module, image module, cutting module, etc.



PCB Splitting Machine Combined with Cassette Loader



AM570A-2 (Combination Type)

1. General Standards:

Equipment model: **Equipment size:** Equipment weight: Spec voltage: Spec power: PCB size: PCB material: Milling cutter diameter: **Repeatability:** Cutting speed: Moving speed: Z-axis stroke: Head rotation speed: X, Y, Z axis: Air supply pressure:

AM470A-02 1450mm(L)*1000mm(W)*1500mm(H) 400KG **03 AC380V 50HZ** 3kw 330mm(L)*250mm(W)*3mm(H) FR4, cem1, cem3 and other resins $\phi 0.8 \sim \phi 3.0 \text{mm}$ $\leq \pm$ 0.01mm (Splitting Machine) Max.100mm/s Max.1000mm/sec Max.70mm 5000-60000rpm AC Servo(KTI Standard Module) above 0.4MPa

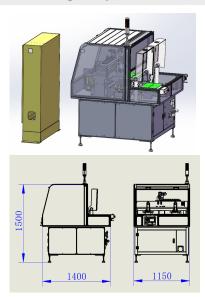
2. Functions:

In-line/off-line dual mode; multi-variety and low-volume production, scalable models; automatic matching of preset working procedures; expected planning of overall factory automation solutions; automatic adjustment of milling cutter depth (automatic shifting) to extend the life of cutting milling cutters; Optional modules: automatic tool change, dust suction, automatic chip removal, dust suction switch, etc.

3. Main Components:

High-precision servo module, image module, cutting module, etc.

Double Stages Type PCB Splitting Machine



AM570A-2 (Double Stages)

1. General Standards: Equipment model: **Equipment size:**

PCB size:

About 500KG Equipment weight: φ3 AC380V 50HZ Spec voltage: Spec power: 4kw PCB material: Milling cutter diameter: φ0.8~φ3.0mm **Repeatability:** Cutting speed: Max.100mm/s Moving speed: Z-axis stroke: Max.70mm Head rotation speed: 5000-60000rpm X, Yx2, Z axis: Air supply pressure: above 0.5MPa

AM570A-02 1400mm(L)*1150mm(W)*1500mm(H) 330mm(L)*250mm(W)*3mm(H) FR4, cem1, cem3 and other resins $\leq \pm 0.01$ mm (Splitting Machine) Max.1000mm/sec AC Servo(KTI Standard Module)

2. Functions:

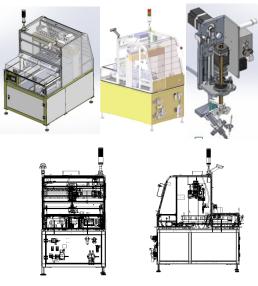
In-line/off-line dual mode; multi-variety and low-volume production, scalable models; automatic matching of preset working procedures; expected planning of overall factory automation solutions; automatic adjustment of milling cutter depth (automatic shifting) to extend the life of cutting milling cutters; Optional modules: automatic tool change, dust suction, automatic chip removal, dust suction switch, etc.

3. Main Components:

High-precision servo module, image module, cutting module, etc.



Single Station Automatic Spot Soldering Machine



1. General Standards: **Equipment model:** Equipment size: Equipment weight: Spec voltage: Spec power: Max PCB size: PCB material: **Repeatability:** Soldering Head: Tin conductor: Moving speed: Z-axis stroke: X, Y, Z axis: Air supply pressure: Air consumption:

AM721-01 600mm(L)*1450mm(W)*1500mm(H) 300KG φ3 AC380V 50HZ 3kw 330mm(L)*250mm(W)*3mm(H) FR4, cem1, cem3 and other resins ≤±0.01mm QUICK ET9584E 0.5mm-0.8mm wire Max.1000mm/sec Max.70mm AC Servo(KTI Standard Module) above 0.4MPa 20-30L/min(A.N.R)

AM721-01

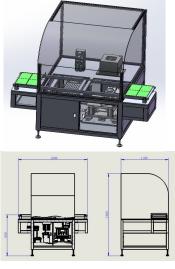
2. Functions:

Single station automatic soldering machine is an automatic spot welding device for PCB board soldering. This machine includes a frame unit, an X, Y, Z, θ axis motion unit, a soldering unit, and a fixture unit.

3. Main Components:

High-precision servo module, Soldering head module, Fan smoke extraction system, Air blow cleaner for soldering iron tip, etc.

Automatic Selective Wave Soldering Machine



DS240102-3

- General Standards: Equipment model: Equipment size: Equipment weight: Spec voltage: Spec power: PCB size: PCB material: Air supply pressure: Air consumption:
- DS240102-3 1100mm(L)*1600mm(W)*1900mm(H) 500KG φ3 AC380V 50HZ 10kw 330mm(L)*250mm(W)*3mm(H) FR4, cem1, cem3 and other resins above 0.4MPa 20-30L/min(A.N.R)

2. Functions:

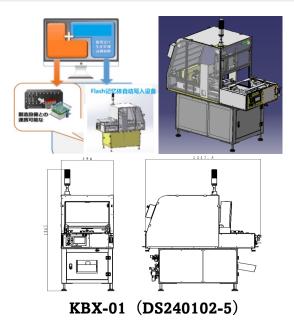
After the DIP part insertion is completed, the substrate is put in by the transfer robot, and after flux is applied to the DIP part, it is baked and dried, and then soldered by the wave soldering unit to the part insertion. The soldered PCB moves to the exclusion station, and a robot grabs and moves it to the downstream station.

3. Main Components:

Combination of XYZ axis of the straight-line 3-axis; Professional welding electromagnetic pumps; Spraying unit; The combination of the XY axis of the straight-line 2-axis; Flux professional spraying group Frame unit: mainly by 50x50 welding frame; Sheet metal door plate, foot cup support; Upper frame unit: Aluminium frame, PET sealing plate, signal light, control box; Conveyor unit: substrate loading and unloading, welding, spraying position conveyor; Pre-heating unit: heat generating unit to heat bake the substrate after spraying.



In-line Automatic Program Writer Machine



1. General Standards: Equipment model: Equipment size: Equipment weight: Spec voltage: Spec power: PCB size: PCB material: Repeatability: Moving speed: Z-axis stroke: X,Y,Z,θ axis: **Imaging Process Unit:** Program writing unit: Air supply pressure: Air consumption:

KBX-01 1250mm(L)*600mm(W)*1500mm(H) 200KG φ3 AC380V 50HZ 3kw 330mm(L)*250mm(W)*3mm(H) FR4, cem1, cem3 and other resins ≤±0.01mm Max.1000mm/sec Max.70mm AC Servo(KTI Standard Module) JEVSA-YV260A2-E YOKOKAWA, LIJIEFEN, etc. above 0.4MPa 20-30L/min(A.N.R)

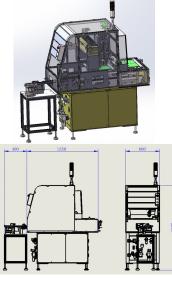
2. Functions:

In-line/off-line dual-machine mode; suitable for multi-variety and low-volume production; scalable machine types; automatic matching of preset work procedures; expected planning of the overall factory automation solution; placement heads can be replaced.

3. Main Components:

High-precision servo module; Image processing & position setting module; Head changeable tooling module; Safety module, etc.

Odd Shaped Component (Capacitor, Connect, Jump pin, etc.) Placement Machine





1. General Standards: **Equipment model:** Main Equipment size: Equipment weight: Spec voltage: Spec power: PCB size: PCB material: **Repeatability:** Moving speed: Z-axis stroke: X,Y,Z,θ axis: Imaging Process Unit: Air supply pressure: Air consumption: Parts Supply:

DS240102-2 1350mm(L)*600mm(W)*1500mm(H) 400KG φ3 AC380V 50HZ 4kw 330mm(L)*250mm(W)*3mm(H) FR4, cem1, cem3 and other resins ≤±0.01mm Max.1000mm/sec Max.70mm AC Servo(KTI Standard Module) JEVSA-YV260A2-E above 0.4MPa 20-30L/min(A.N.R) Customized Design

2. Functions:

This device is an automatic equipment for inserting capacitors, plugs, jumper pins and other DIP-shaped electronic devices into PCB circuit boards after automatic alignment.

3. Main Components:

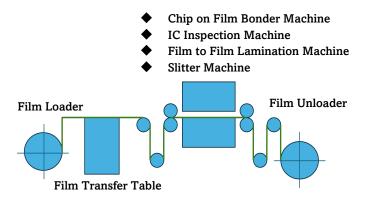
the XYZ PnP unit; electronic device pre-calibration table; substrate fixture unit; pin bending unit; XY θ alignment insertion unit; PCB substrate stage; image processing system and so on.



Lamination Machine & Roll to Roll Manufacturing System

KTI develops, designs, and manufactures high-precision laminating equipment that automates the lamination of flat hardboards to flat hardboards (ex: glass to glass), film to flat hardboards, and film to film in an atmospheric pressure environment. The equipment is widely used in the manufacturing plants of customers such as flat panel display manufacturers, touch panel manufacturers, and thin film sensor manufacturers. High-precision alignment technology and roller-to-roller manufacturing technology. We provide a solid guarantee for our customers' high-volume, high-quality production. Starting from the customer's new goods to the new production technology, and new equipment manufacturing, the company insists on innovative activities in this field together with the customer. We have designed and manufactured a variety of industry-first equipment and obtained several technical patents.

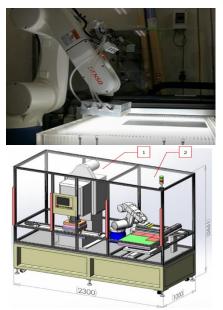
KTI' Technology in Chip on Film by Roll to Roll Manufacturing





- High-precision positioning accuracy control is performed using image pattern recognition and alignment technology.
- GPIB communication is used to operate and control measuring instruments and collect data.
- Tension sensors and meander sensors are used to protect the stability of roll-to-roll film conveyance.

Multi-film To film Automatic Laminating Machine



VT-IV-1

1. General Standards:Equipment model:VT-IV-1Equipment size:2300mmEquipment weight:2000KGSpec voltage: ϕ^3 AC38Spec power:10kwFilm size:A Film: 2B (base fFilm material:Metal SuPositioning accuracy: $\leq 5\mu m$ Film-to-Film Splicing Accuracy: $\leq 10\mu m$ Air supply pressure:above 0.-Air consumption:20-30L/r

VT-IV-1 2300mm(L)*1000mm(W)*1990mm(H) 2000KG φ3 AC380V 50HZ 10kw A Film: 250*250(mm), thickness>50μm B (base film):800x800mm, thickness>80μm Metal Surface Coating Layer Film after Sbuttering Process ≤5μm : ≤10μm above 0.4MPa 20-30L/min(A.N.R)

2. Functions:

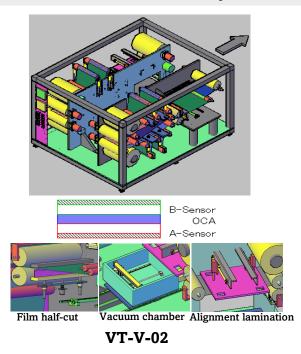
This is an automated film-to-film laminating system that splices 9 sheets of 250mm x 250mm film with a metallic coating of about 80 μ m in thickness onto a 750mm x 750mm film substrate with a thickness of 50 μ m under atmospheric pressure.

3. Main Components:

The unit consists of a film separation and loading unit, a film edge punching unit, a film transfer table, a robot unit for laminating, an XY θ alignment table for base film attachment, an XY θ camera arm unit, an image processing alignment system, a standard safety guard unit, and a system control unit.



Roll to Roll Film Lamination System Line



1. General Standards: Equipment model: Equipment size: Equipment weight: Spec voltage: Spec power: Film size: Film thicknesses: Lamination accuracy: Imaging Process Unit: Air supply pressure: Air consumption:

VT-V-02 2500mm(L)*3000mm(W)*1700mm(H) 3000KG φ3 AC380V 50HZ 10kw φ400mm coil W:400-500mm 50μm, 150μm, 150μm ≤±0.05mm JEVSA-YV260A2-E above 0.4MPa 20-30L/min(A.N.R)

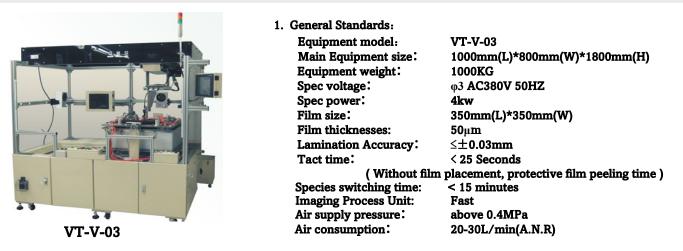
2. Functions:

Roller to Roller manufacturing method automatic laminating production line is used for laminating whole rolls of A Sensor Film + OCA Film and B Sensor Film + OCA Film. The machine utilizes CCD image alignment system, XY θ alignment platform and roller continuous feeding technology to achieve high-speed fully automated film-to-film lamination.

3. Main Components:

The system consists of 2 roll-out units for A and B film substrates in roll form; 2 half cutter units; 2 protective film peeling and winding units; a vacuum suction chamber unit; an XY θ alignment table; a laminating unit; 2 film buffer units; and a finished product winding unit.

Semi-auto Film to Film Lamination Machine



2. Functions:

This device is a semi-automated machine used in the touch panel manufacturing process to accurately laminate two optical films, A and B, under atmospheric pressure. The operator will A, B two pieces of optical film, according to the operating procedures, placed, adsorbed in the upper and lower two tables within the specified area. Manually peel off the protective film layer of each film, press the automatic switch, and then the machine automatically recognizes the alignment Mark position of the optical film, completes the calibration, and then squeezes by the roller system in the vacuum chamber, moving, and completes the precise lamination of the two pieces of optical film.

3. Main Components:

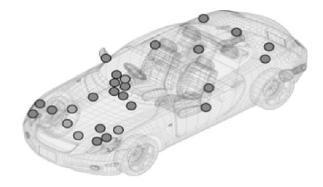
Reversing table with vacuum suction function; $XY\theta$ alignment table; Vacuum chamber; Roll laminating system; Positioning system for image recognition; Photographic optical system; Standard safety system; Control and operator interface system.

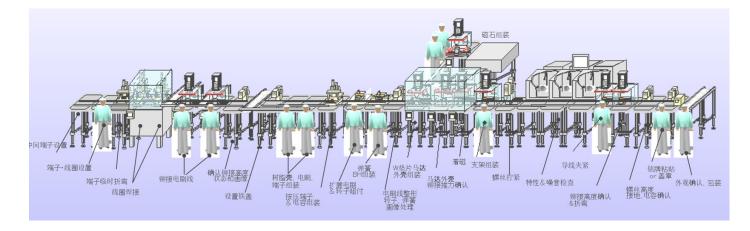


Micro Motor Assembly Equipment and Production Line

KTI adheres to the concept and innovation of standardized and modular equipment design and manufacturing. Through information technology and intelligent technology, the equipment of each process unit in the production process is combined with advanced production technology. Maximum flexibility in different production scenarios and production line construction. It can be adapted to the production of small batch and multi-species, reduce the waste of investment and shorten the cycle of putting new products into production.

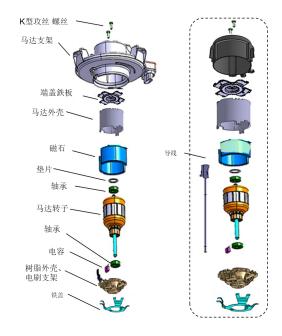
KTI has accumulated rich experience and engineering performance in the field of micro-motor manufacturing.





Automotive Blower Motor Assembly Manufacturing Line & Process Unit Equipment

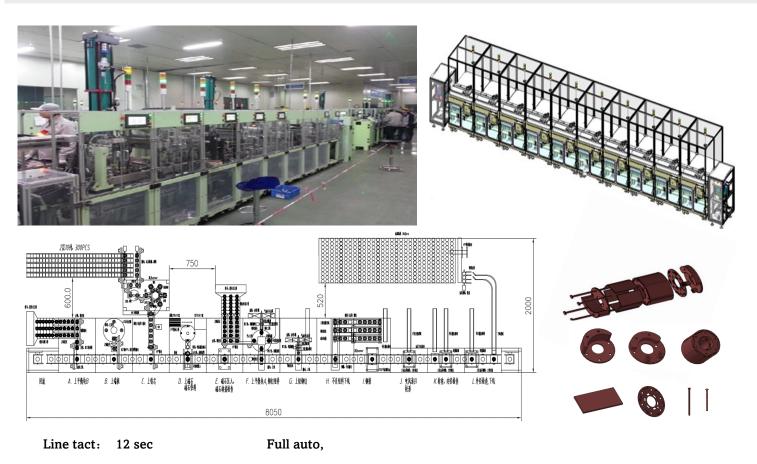




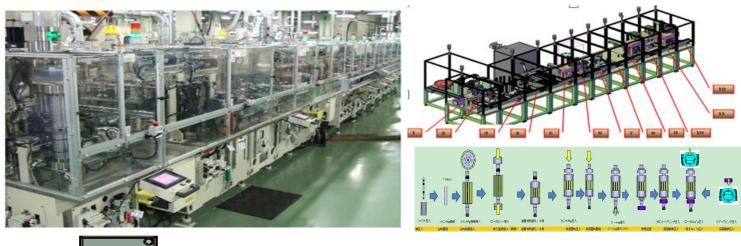
Line tact: 12 sec



Modularized Compressor Rotor Assembly and Test Automatic Production Line



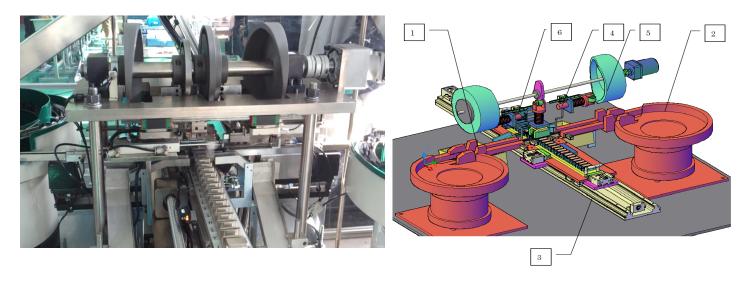
Small Motor Rotor Automatic Assembly Line

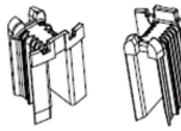


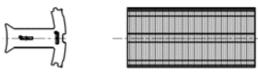




Small Motor Manufacturing Process: Automatic Insulator Insertion Machine

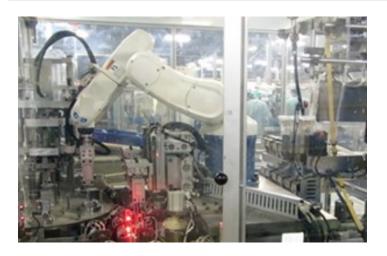


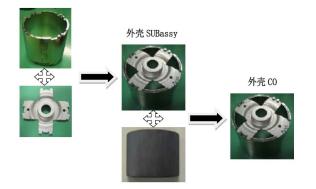


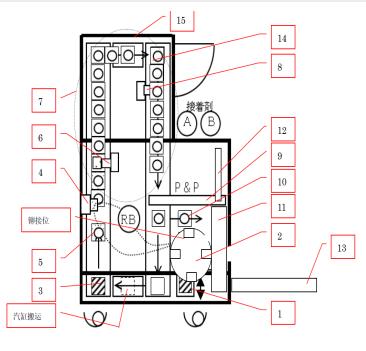


Tact time: 1.7 S/ Pic

Automatic Assembly Line for Small Motor End Cap Rivet and Magnets Insertion







Line tact: 6 sec

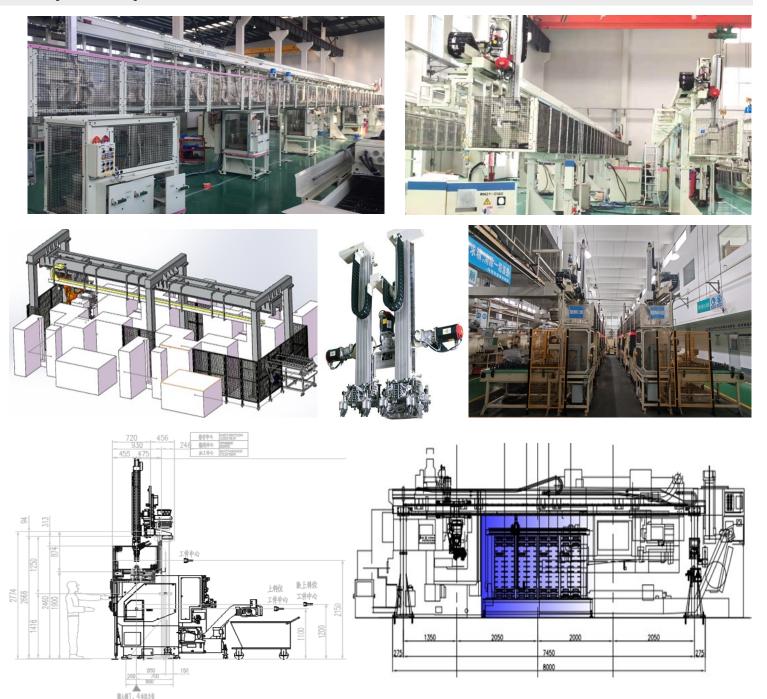


Automatic Transfer Manipulator System Line

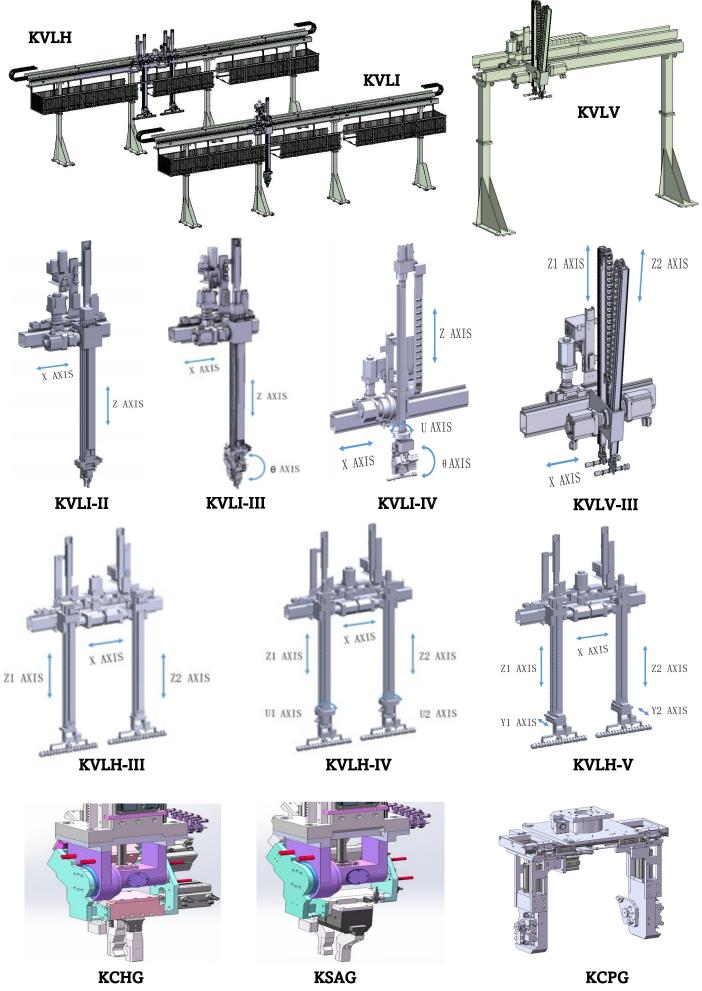
KTI specializes in developing and manufacturing systematic high-speed robot conveyor lines, providing strong technical and equipment support for the realization of flexible and modular production in intelligent factories. After more than a decade of technology iteration and precipitation, KTI smart automatic conveying system equipment has been widely used in automated processing production lines for automotive parts, cylinder blocks, cylinder heads, gearbox housings, crankshafts, camshafts, connecting rods, half shafts, and other parts.

KTI high-speed robot handling system equipment is also widely used in back-end engineering manufacturing and automatic inspection lines of PCBA assembly represented by automotive electronics. It helps back-end engineering to realize unmanned factories.

Gantry Loader System Line

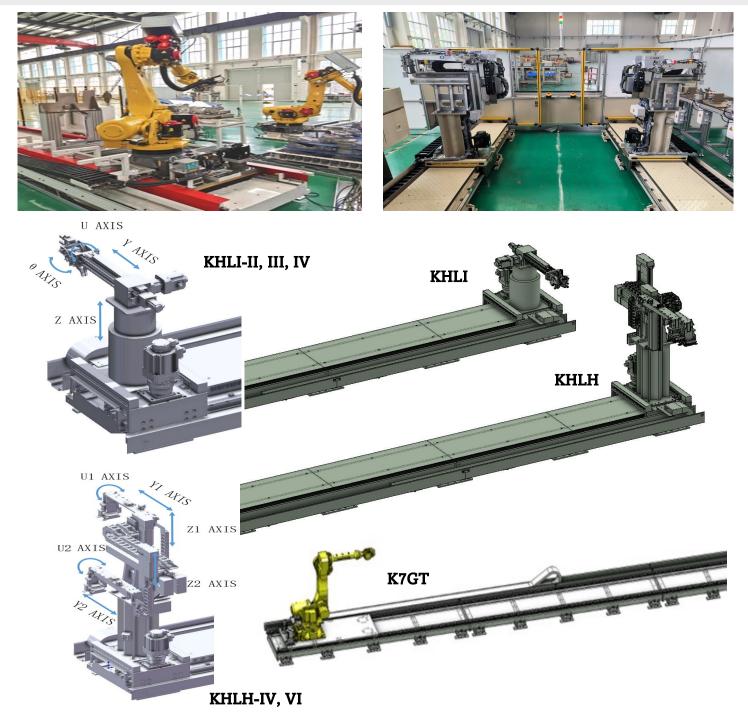








Gland Rail Manipulator Transfer System Line

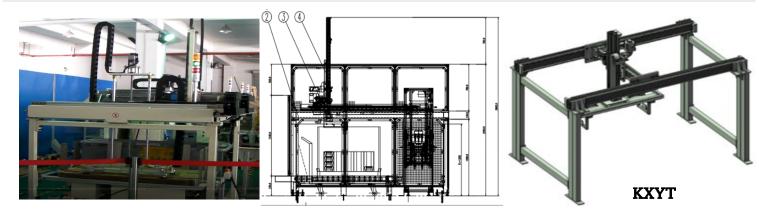


Gantry Robot System Line



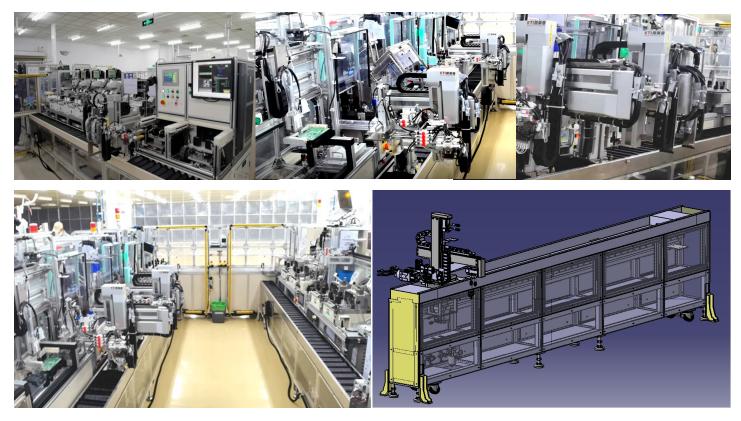


Longer Distance Y-axis Gantry Robotic System Equipment



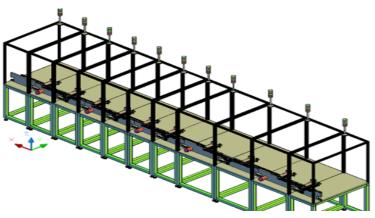
Light-load, Long-distance, Multi-axis Manipulation and Transport System Equipment

Work manipulation transport system Line



Jiku manipulation transport system line

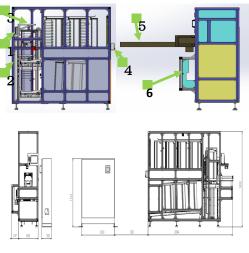






Other Standard Manufacturing Machines

PCB Cassette loader/unloader



(KBG-01)

Dust Collector



KJC-I Pro

- 1. General Standards: Equipment model: Equipment size : **Equipment weight** : Spec voltage : Spec power : PCB size : PCB material: **Repeatability** : Cassette size: Air supply pressure : Air consumption :
- **KBG-01** 1250mm(L)*600mm(W)*1500mm(H) 200KG φ3 AC380V 50HZ 3kw 400mm(L)*350mm(W)*3mm(H) FR4, cem1, cem3 and other resins ≤±0.5mm Standard above 0.4MPa 20-30L/min(A.N.R)

2. Functions:

SMT & PCB assembly processing universal machine; PCB board tilt detection; Automatic confirmation of PCB cassette box and PCB board; Feeding early warning reminder; Can be docked with AGV.

- 3. **Main Components** Lifting module; PCB board push unit; Positioning unit; Safety module
- 1. General Standards: Equipment model: **Equipment size** : **Equipment weight** : Spec voltage : Spec power : Max air volume : Max static pressure : **Dust collection mode:** Filter element material : Dust removal method: Volume: **Dust collection pipe O.D.:** Painting color:
- 2. Functions:

KJC-030I Pro Ø1260mm(L)*520mm(W)*1130mm(H) 110KG φ3 AC220V 50HZ 3kw 420m³ 22KPa **External filtration** Polvester film Manual dust removal 30T. Φ65 5Y8/1

It is specially designed for continuous work in the field of heavy industry, and is mostly used in supporting continuous production. It is suitable for collecting a large amount of fine dust with high filtration accuracy. Such as medicine, electronics, metal processing, ceramic processing, chemical



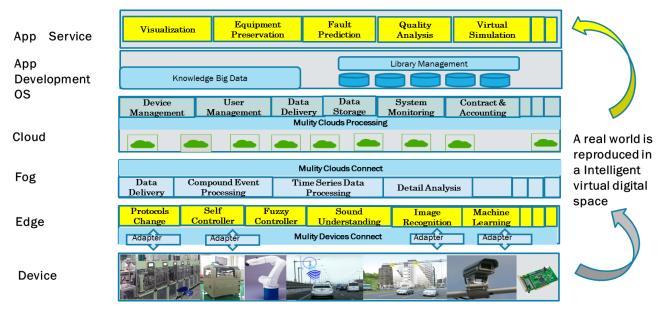


DX Intelligent Space Management System based on the Cloud Platform

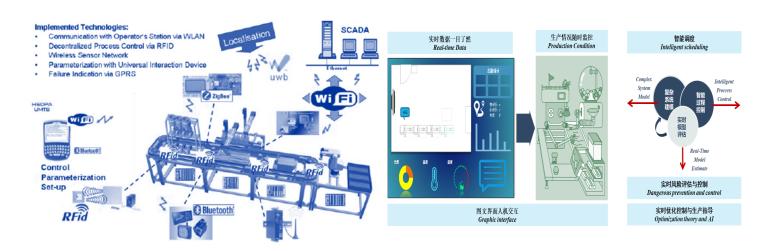
The KTI Intelligent Solution Hub is a proven intelligent manufacturing solution. These solutions package components/development environments and partner-developed applications on a cloud platform in a format that is easy to import and deliver. Used in a multi -cloud environment with the latest Container Technology, the solutions can be easily combined and customized to make the user's DX simple, fast, and scalable.

From early validation of solutions, to smooth transition to production environments, to rapid deployment in global manufacturing environments, we support the use of different technologies in different ecosystems.



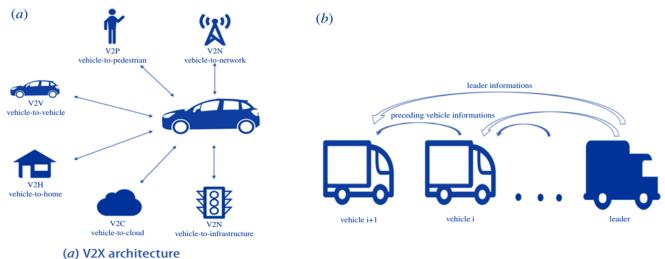


Smart Factories and Smart Manufacturing based on KTI Smart Solution Center Platform





Smart Roads with V2X and VANETs Using the KTI Intelligent Solution Hub -- Intelligent Tunnel Safety Management System



(b) vehicular platooning where vehicles in the rear follows the front vehicle.

Intelligent Road Tunnel Management System

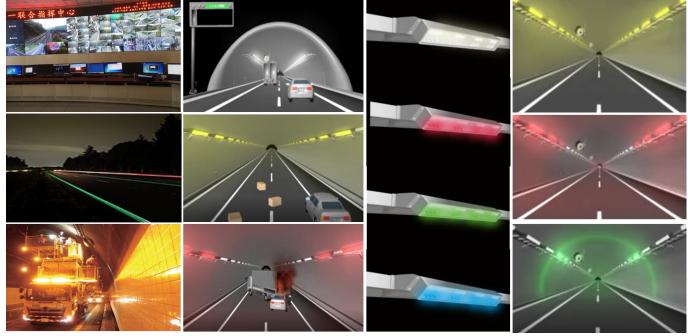


1: Intelligent tunnel information management;

2: Intelligent tunnel safety inspection and monitoring robot system;

3: Traffic flow and operation management system;

4: Robotic system for automatic cleaning, replacement and maintenance of luminaires in tunnels.





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YouTube Video: youtube.com/channel /UC7feAV0kXkvvoTuNqcDma_A



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