Asano Laboratories Co., Ltd.

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Asano creates new value by selecting and blending various excellent individual elements.

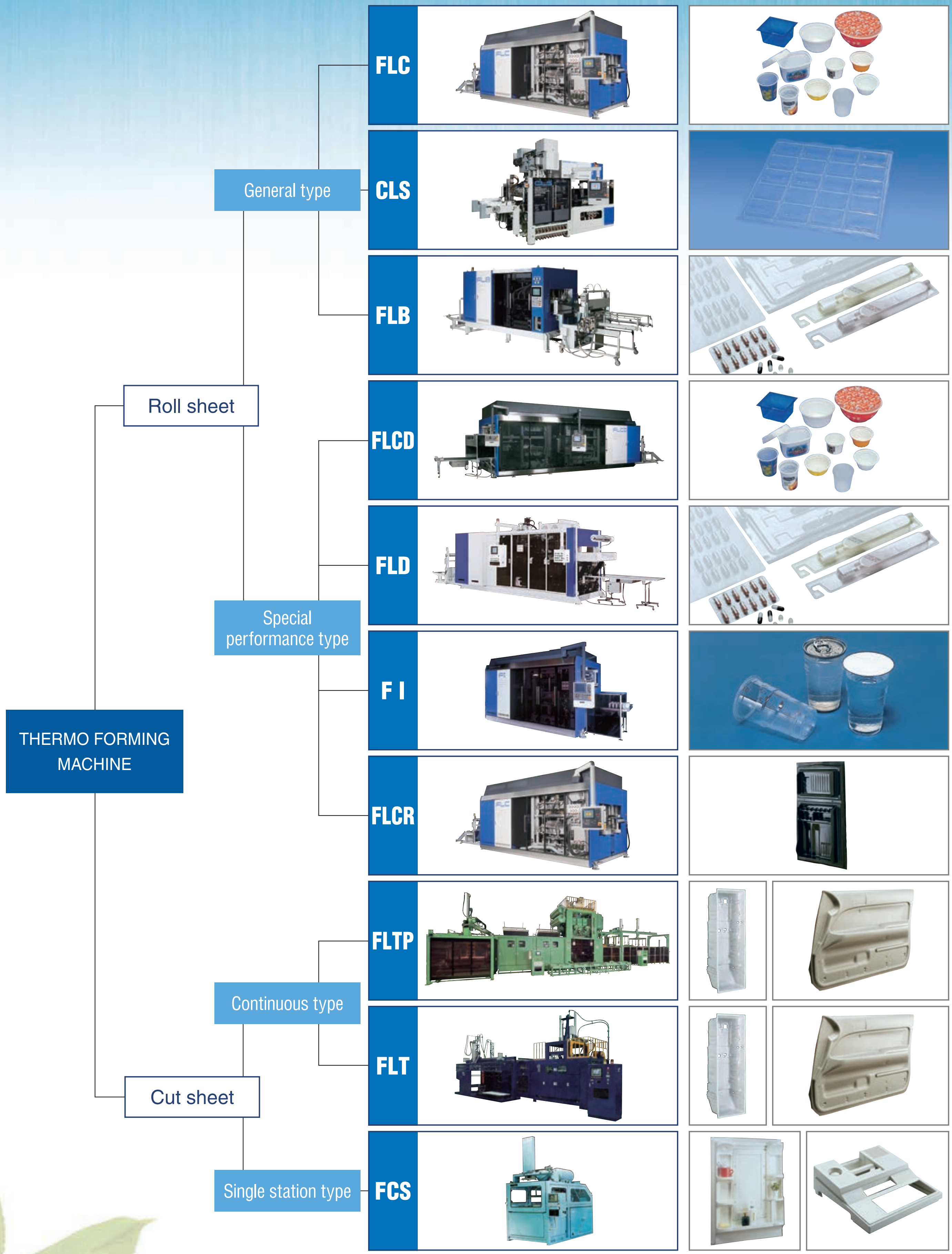
Asano Laboratories Co.,Ltd is a world leading manufacturer of thermoforming machines for thermoplastic sheets.
We offer wide range of machines such as vacuum forming machine, pressure and vacuum forming machine, hot plate (contact) heating type pressure forming machine, forming machine synchronized and combined with sheet extruder, test machine, trimming machine and others.

Company Profile

Corporate Name : Asano Laboratories Co., Ltd.
Capital : J. Yen 546,850,000
Annual Sales : J. Yen 5,700,000,000 (2015)
Establishment : October 7,1953
Address : 158-247, Kitayama, Morowa Togo-cho, Aichi-gun, Aichi Pref. 470-0151 Japan
Phone : 81-561-38-1211/Fax: 81-561-38-1218
HP : http://www.asano-lab.co.jp
Staffs and Employees : 120

History

1953 Founded by Kazuo Asano at Miyukiyama, Tempaku-ku, Nagoya, and production and sale of high-frequency welders are begun.
1955 Production and sale of thermoforming machines are launched.
1961 Production elements relocated to new plant in Togo-cho, Aichi-gun, Aichi Prefecture.
1969 No.3 Plant is built.
1973 Head Office relocated to Iwata Building in Nishiki, Naka-ku, Nagoya.
No.4 Plant built.
1978 Late Kazuo Asano appointed as President and CEO.
1984 No.4 Plant is expaned.
1986 Cosmo Equipment Sales Co.,Ltd. established to dedicated to the sales of the Asano products.
1990 Received Distinguished Supplier Award from General Electric (USA) in appreciation of Asano's high-performance thermoforming machines supplied for their refrigerators.
1991 New Head Office building (three stories) completed.
1992 Head Office relocated from Nagoya and consolidated upon the completion of new employee housing.
1997 No.5 Plant and Painting Plant added.
2005 No.4 Plant is expaned.
2007 Concluded License Agreement with Sencorp Inc., MA, USA.
2010 Total number of machine production exceeded 5,000 units.
2011 Exhibited actual machine in Chinaplas for the first time.
2012 TFH machine Got the 24th SMB new excellence technique product prize.
2016 R&D center open.
Beijing show room open.


THERMO FORMING MACHINE
Roll sheet
General type
FLC
CLS
FLB
Special performance type
FLCD
FLD
F I
FLCR
Cut sheet
Continuous type
FLTP
FLT
Single station type
FCS

FLC type

High-performance pressure and vacuum thermoforming machine

Specification

Model	FLC-415PC5.2-Q2-GS
Max. forming area	1,000(W)×1,100(L)㎜
Min. forming area	560(W)×600(L)㎜
Max. forming depth	150㎜
Forming method	Pressure and vacuum (Straight, drape, plug assist, matched mold)
Sheet feeding method	AC servo drive, Grip type chain
Heater	Quick response heater, 2stage heating
Sheet surface temp. Detector	Measure sheet surface temp. by pyrometer and control the heater
Forming table driving method	Crank type by AC servo motor drive
Max.mold clamping force	450kN
Mold change device	Mold changer inside the machine
Control	Full automatic, PLC control

Feature

1. Sheet feeding
   - Strong grip chain feeding, No plastic chip.
2. Heating method
   - Quick response heater, excellent in response, most suitable for sheet heating.
   - Sheet temperature feedback control.
3. Forming table
   - The position and speed control by using AC servo motor and crank mechanism make possible high speed and stable forming.
4. High response valve
   - Possible to operate with the high cycle speed and most suitable vacuum timing by the valves of our own development.
5. Rail width enlargement & sheet lifting device
   - Possible to form the sheet with big draw down by using rail width enlargement device in the forming station and sheet lifting device in the heater station.

Process

Sheet supply → Sheet feed → Heating → Forming/Cooling → Products

CLS type

Hot plate heating type pressure thermoforming machine

Specification

Model	CLS-532.2	CLS-542.2
Max. forming area	1,050(W)×1,200(L)㎜	
Min. forming area	600(W)×650(L)㎜	
Max. forming depth	100㎜	
Forming method	Air pressure forming with sheet heating on metal plate (Available vacuum forming)	
Sheet feeding method	AC servo drive, Grip type chain	
Heater	Aluminum casting heater	
Forming table driving method	AC servo moter drive, double toggle type	
Max.mold clamping force	600kN	
Mold change direction	Inlet side	Operation side
Control	Full automatic, PLC control	

Feature

1. High productivity
   - High cycle speed.
   - Minimize the time for mold changeover.
   - High speed response forming circuit.
2. Improvement of forming
   - More transparent product surface by the improvement of not plate surface.
   - Possible to set up mold clamping force.
   - Possible to use air circuit corresponding to forming area.
   - Easy to control the surface temperature of hot plate.
3. Easy operation and high repeatability
   - Digital screen by touch panel.
   - Data control by computer.
   - High accurate servo motor.
4. Others
   - Equipped with maintenance pre-notice function.

Process

Sheet supply → Sheet feed → Hot-plate heating → Forming/Cooling → Products

FLB type

High-mix Low Volume Production Compliant Small Continuous Vacuum Thermoforming Machine

Feature

1. Best for high-mix low volume products
   - Standardize the water cooling base. Reduction time required cavity change.
   - Vacuum type cavity mount. No need masking tape or bolting.
   - Easy data management. Read-modify-write-storage operation by touch panel.
2. Easy temperature control by quick response heater and sheet temp. control
3. Prevent from plastic powder by grip type chain sheet feeder
4. Excellent formability by sheet feeding chain rail enlargement system

■ Specification

Model	FLB-21-1.2	FLB-31-1.2
Max. forming area	600(W)×1,000(L)mm	800(W)×1,000(L)mm
Min. forming area	360(W)×300(L)mm	460(W)×300(L)mm
Max. forming depth	Draw positive 100mm, negative 100mm	
Forming method	Vacuum forming	
Table drive force	20kN	
Heater	1 stage upper and lower heating by quick response heater	
Sheet feeder	Grip type chain, AC servo motor drive	
Traveling knife cutter	Included	

■ Process

Sheet supply → Sheet feed → Heating → Forming/Cooling → Shot cutting → Products

FLCD type

Pressure and vacuum thermoforming machine with steel rule die cutting

Feature

1. Space saving & reduction of operators
   - The machine is composed of heating, forming, trimming and products unloading equipments.
2. Workable with small lot and many kind of products.
3. High productivity.
4. Safety.
5. Easy operation and high repeatability
6. Saving energy, clean and low noise

■ Specification

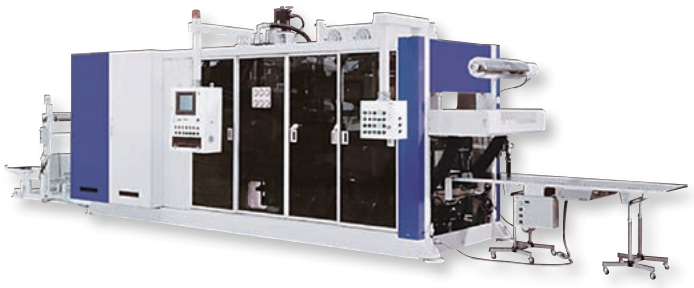
Model	FLCD-315PC4.2-Q2	FLCD-415PC4.2-Q2
Max. forming area	800(W)×800(L)mm	1,000(W)×1,100(L)mm
Min. forming area	500(W)×460(L)mm	600(W)×600(L)mm
Max. forming depth	Draw positive 150mm, negative 80mm	
Forming method	Pressure and vacuum (Straight, drape, plug assist, matched mold)	
Sheet feeding method	AC servo drive, Grip type chain	
Heater	Quick response heater, 2stage heating	
	Total 134.9kW	Total 205.7kW
Sheet surface temp. Detector	Measure sheet surface temp. by pyrometer and control the heater	
Forming table driving method	Crank type by AC servo motor drive	
Max.mold clamping force	450kN	
Mold change device	Mold changer inside the machine	
Control	Full automatic, PLC control	

■ Process

Sheet supply → Sheet feed → 2 stage heating → Forming/Cooling → Trimming → Products

FLD type

Pressure and vacuum thermoforming machine with steel rule die cutting



Feature

1. Minimize defective products ratio, high productivity
2. Easy operation and high repeatability
3. Most suitable sheet heating

■ Specification

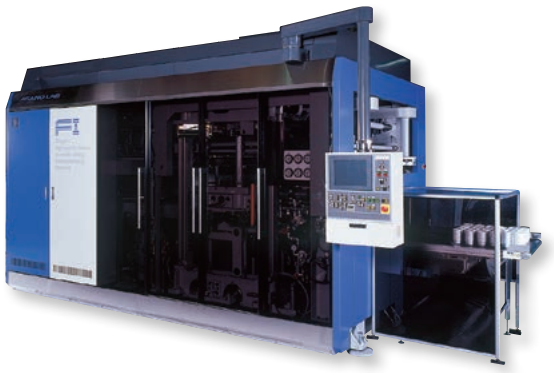
Model	FLD-208VC4.2	FLD-208PC4.2
Max. forming area	600(W)×600(L)㎜	
Min. forming area	400(W)×350(L)㎜	
Max. forming depth	Depth of draw positive 80㎜, negative 80㎜	
Forming method	Vaccum forming	Pressure and vaccum
Sheet feeding method	AC servo drive, Grip type chain	
Heater	Quick response heater	
Sheet surface temp. Detector	Measure sheet surface temp. by pyrometer and control the heater	
Forming table Driving method	AC servo drive, Ball screw type	
Max. mold clamping force	—	150kN
Mold change device	Mold changer inside the machine	
Control	Full automatic, PLC control	

■ Process

Sheet supply → Sheet feed → 2 stage heating → Forming/Cooling → Trimming → Products

F I type

High-performance in-mold cutting thermoforming machine



Feature

1. Merits of in-mold cutting thermoforming machine
   - As forming and trimming is made inside the same mold, trimming position is exact.
   - As one machine can do forming and trimming, machine is compact and space saving.
   - As forming pitch is not restricted to punch and die mold structure, possible to make smaller the forming pitch resulting in the material saving.
2. Increase added value with cut-in-place trimming by steel rule
   - The realization of MPF cut-in-place trimming for PP, PE (Olefin plastics) sheet which was not possible by conventional punch and die type.
   - The realization of retort containers and high temperature food filling containers.
   - No angel hair comes out at the time of cutting film layers such as EVOH.
   - Because the material is cut by steel rule while the material is soft, smooth cut is made. Plastic chip and powder do not come out.
   - The mold fabrication cost is cheaper and shorter delivery time than the conventional punch and die type.

■ Specification

Model	FI 33-1.2
Max. forming area	800(W)×600(L)㎜
Min. forming area	550(W)×400(L)㎜
Max. forming depth	Draw negative 150㎜
Forming method	Pressure and vacuum (Straight, drape, plug assist, matched mold)
Sheet feeding method	AC servo drive, Grip type chain
Heater	Quick response heater
Sheet surface temp. Detector	Measure sheet surface temp. by pyrometer and control the heater
Forming table driving method	Crank type by AC servo moter drive
Max.mold clamping force	400kN
Mold change device	Mold changer inside the machine
Control	Full automatic, PLC control

■ Process

Sheet supply → Sheet feed → Heating → Forming/Cooling/Trimming → Products

FLCR type

Pressure and vacuum thermoforming machine

Feature

1. Thermoform refrigerator inner door by rolled sheet
2. High performance pressure and vacuum thermoforming machine
3. Grip type chain
4. Quick response heater

■ Specification

Model	FLCR－415PC5.2
Max. forming size	1,000(W)×1,100(L)㎜
Min. forming area	560(W)×600(L)㎜
Max. forming depth	Upper positive 150㎜
Forming method	Pressure and vacuum
Sheet feeding method	AC servo motor drive, grip type chain
Sheet surface temp.detector	By thermometer (Keyence)
Forming table driving method	AC servo motor drive, crank type
Max. mold clamping force	450kN
Control	Full automatic, PLC control

■ Process

Sheet supply → Sheet feed → 2 stage heating → Forming/ Cooling → Products

FLTP type

Pressure and vacuum thermoforming machine

Feature

1. Minimize defective products ratio, high productivity
2. Easy operation and high repeatability
3. Most suitable sheet heating

Refrigerator inner liner and door linner

■ Specification

Model	FLTP-9602-30-1.2	FLTP-9602-35-1.2
Max. forming area	1000(W)×2,000(L)㎜	
Min. forming area	525(W)×1,000(L)㎜	
Max. forming depth	Draw positive 250㎜, negative 100㎜	
Forming method	Pressure and vacuum	
Sheet feeding method	AC servo motor drive, spike chain type	
Heater	Ceramic heater	Quick response heater
Sheet surface temp. Detector	None	Thermometer (Keyence)
Forming table driving method	Hydraulic cylinder drive	AC servo motor drive, Ball screw type
Max.mold clamping force	300kN	350kN
Control	Full automatic, PLC control	

※ Available other forming size

■ Process

Sheet supply → Sheet feed → 2 stage heating → Forming/ Cooling → Products

FLT type

Vacuum thermoforming machine

Feature

1. Minimize defective products ratio, high productivity
2. Easy operation and high repeatability
3. Most suitable sheet heating

■ Specification

Model	FLT-9602-1.2
Max. forming area	1,000(W)×2,000(L)㎜
Min. forming area	525(W)×1,000(L)㎜
Max. forming depth	Draw positive 250㎜, negative 600㎜
Forming method	Vacuum forming
Sheet feeding method	AC servo motor drive, spike chain type
Heater	Ceramic heater
Forming table Driving method	Air cylinder drive
Max. mold clamping force	30kN
Control	Full automatic, PLC control

■ Process

Sheet supply → Sheet feed → 2 stage heating → Forming/ Cooling → Products

EFL type

Pressure and Vacuum Thermoforming Machine Interlocking Extruder

Feature

1. Saving energy and material by interlocking system with extruder
2. Good at automobile large parts like mad guard or fender liner
3. Reduction of material cost by scrap recovery system
4. Half mold price compared with injection forming
5. Short cycle time compared with injection forming

■ Specification

Model	EFL-960-40
Max. forming area	1,000(W)×2,000(L)㎜
Min. forming area	1,000(W)×1,000(L)㎜
Max. forming depth	Upper forming on the above the sheet 600㎜, Lower forming bellow the sheet 100㎜
Mold clamping forth	400kN
Extruder	Bore: 125㎜ Discharge rate: 450kg/hour
Trimming press	Thrust force : 600kN

■ Process

Sheet extrusion → Sheet supply → Sheet feed → Heating → Forming/ Cooling → Trimming → Products / Scrap winding

FCS type

Single station type vacuum thermoforming machine

Feature

1. Shorten operation time, high productivity
2. Equipped fully with safety devices
3. Easy operation, high repeatability
4. Most suitable sheet heating
5. Clean and low noise

Automobile plastics parts

Bathtub

Specification

Model	FCS-660APA-W-L-1.2
Max. forming area	1,050(W)×2,000(L)㎜
Min. forming area	525(W)×500(L)㎜
Max. forming depth	600㎜
Forming method	Vacuum forming
Heater	Quick response heater
Sheet surface temp. Detector	Measure sheet surface temp. by pyrometer and control the heater
Forming table driving method	AC servo moter drive, Ball screw type
Control	Full automatic, PLC control

Process

Sheet supply → Heater goes forward → Heating → Herter goes backward → Forming/ Cooling → Products

FKS type

Compact Multifunction Pressure & Vacuum Forming Machine

Feature

1. Ideal machine for cut sheet in order to develop new parts and production for a wide variety of parts in small lot
2. Radiation heating time by Quick response heater
   - Excellent in the temperature responsiveness.
   - Stable sheet temperature control by sheet temperature monitor.
3. Forming
   - Excellent forming repeatability. Sheet feed and table movement by AC servo motor drive.

Specification

Model	FKS-0432.2-20	FKS-0632.2-20
Max. forming area	390(W)×390(L)㎜	600(W)×600(L)㎜
Max. forming depth	150㎜	
Forming method	Strait, drape and plug assist vacuum and pressure thermoforming machine	
Sheet clamp/feed	Toggle clamp (manual) ／AC servo motor drive	
Heater	Both surfaces heat by quick response heater, each element phase control	
Forming table	Mold clamping force 200kN, AC servo motor drive	
Control	Fully automatic, PLC control, heater power control, data management system and 12.1 color touch panel display	

Process

Sheet set → Heater gose forward → heating → Sheet goes forward / Heater goes back ward → Forming → Sheet goes backward → Products

TFH type

3D Surface Decorative Forming Machine

"3D Surface decorative forming" utilizing thermoforming technology is the method to add the value to the surface of base material (for instance, injection molded parts) by covering and adhering the high level of sheet like with decoration.

Feature

1. Stability of quality
   - Whole sheet surface becomes stable by hot plate heating.
   - Forming becomes stable by sheet flxing on the hot plate.
2. Quality improvement
   - Amount of roll-in sheet to the bottom of base material and adhesive strength become increased by Max 0.9MPa pressure air.
3. Reduction of cycle time and energy saving
   - Because there is no upper chamber box and by utilizing the mold frame that matches with the size of base material, space itself becomes smaller and inside of the mold becomes vacuumed in a short time and also the load of vacuum pump becomes smaller.
   - Reducion time requied sheet heating by contact heating.
4. Cost saving
   - The running cost per product becomes decreased by shorten heating and forming time.

Specification

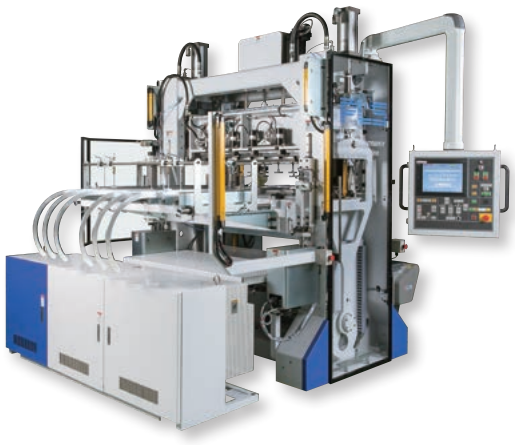
Model	TFH-0121	TFH-0221	TFH-0621	TFH-1221
Max. forming area	170×120㎜	250×180㎜	600×600㎜	550×1,250㎜
Mold frame height	50㎜	100㎜	190㎜ or less	230㎜ or less
Heater	Hot plate			
Forming table	Air cylinder drive			
Table force	15kN	35kN	400kN	600kN
Pressure air value	Max 0.9MPa		Max 0.97MPa	

Process

Sheet set → Bolster goes forward → Heating → Forming/ Trimming → Products

PLS/PLS7 type

Continuous trimming machine



Feature

1. High productivity
   - High speed production.
   - Decrease mold change time.
2. Safety
3. High accuracy, high rigidity
4. Easy operation and high repeatability
   - Touch panel digital setting.
   - Trimming data control by computer.
5. Clean and low noise
6. Available change the mold from operator side
7. Advanced interlocking control

Specification

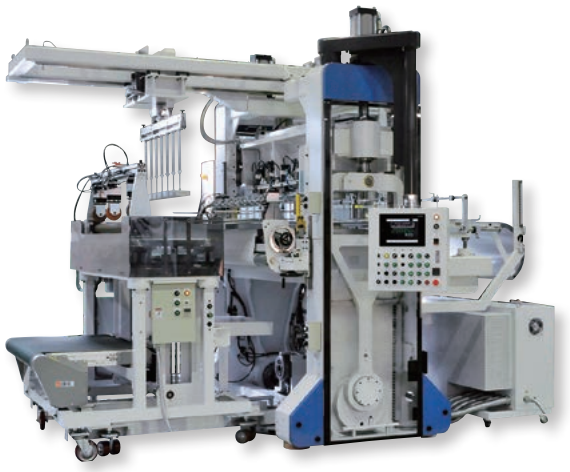
Model	PLS7-415B4.2-R-D-GS
Max. trimming area	1,050(W)×320(L)㎜
Max. forming depth	150㎜
Max. trimming speed	120spm
Trimming force	70kN
Trimming method	Crank type by AC servo motor drive
Sheet feeding method	AC servo moter drive, double roller feed type
Control	Full automatic, PLC control

Process

Supply formed sheet → Trimming → Counting → Products ejection
Trimming → Scrap ejection → Scrap winding

PLS20 type

Continuous Trimming Machine with Steel Rule Die Cutting



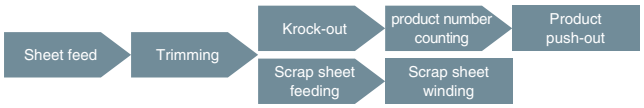
Feature

1. High productivity
   - High speed trimming by servo motor drive.
   - Products ejection with number counting function. Products eject when the products reach set number.
   - Stability production by interlocking with forming machine.
2. Safety
   - Increase in safety devices for the workers.
3. High accuracy and stiffness
4. Friendly operation and repeatability
   - Digital setting by touch panel.
   - Data management by computer.
   - Available dual-use, die cutting and steel rule die cutting (option).

■ Specification

Model	PLS 20-415B4.2
Max. trimming area	1,050(W)×320(L)mm
Max. forming depth	150mm
Max. trimming speed	100spm
Trimming force	200kN
Trimming method	Crank type by AC servo motor drive
Sheet feeding method	AC servo moter drive, double roller feed type
Control	Full automatic, PLC control

■ Process



PLP type

Continuous piercing machine

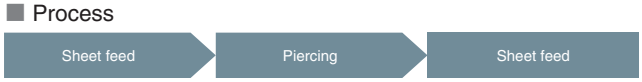
Feature

1. High productivity
   - Connected with PLS type machine enables to pierce and cut with high speed.
2. Safety
3. High accuracy, high rigidity
4. Easy operation and high repeatability
   - Touch panel digital setting.
   - Trimming data control by computer (option).
5. Clean and low noise
6. Available change the mold from operator side

■ Specification

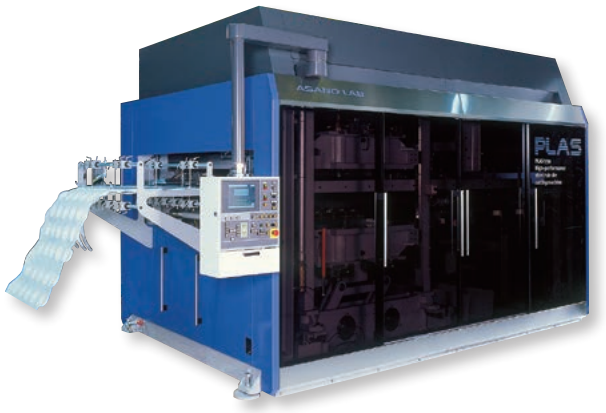
Model	PLP5-415B2.2-R-D-GS
Drop down hole size	1,080(W)×350(L)mm
Max. forming depth	150mm
Max. forming speed	120spm
Trimming force	50kN
Trimming method	Crank type by AC servo motor drive
Sheet feeding method	AC servo drive, double roll fed type
Control	Full automatic, PLC control

■ Process



PLAS type

High-performance steel rule die cutting machine



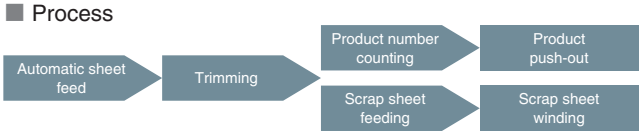
Feature

1. Steel rule
   - Because of steel rule, plastic chips are prevented from coming out at the time of cutting and there are no angel hair in case of cutting film layers such as EVOH.
   - Fabrication cost is cheaper than the conventional punch and die type cutting mold.
2. Trimming position
   - Accurate trimming position by "Table speed reducing function" and "Grip opening function".
   - High cycle speed by servo system and crank mechanism.
3. Automatic position setting function
   - Positioning easy steel rules and products.
4. Quick mold exchange device

■ Specification

Model	PLAS-800-2.2	PLAS-1050-2.2
Max. trimming area	800(W) × 800(L)㎜	1,050(W) × 1,200(L)㎜
Min. trimming area	500(W) × 460(L)㎜	600(W) × 600(L)㎜
Max. trimming depth	Draw positive 150㎜, negative 80㎜	
Trimming force	700kN	
Trimming method	AC servo moter drive, double acting type	
Sheet feeding method	AC servo drive, Grip type chain	
Control	Full automatic , PLC control	

■ Process



PLB type

One shot whole trimming with steel rule die cutting

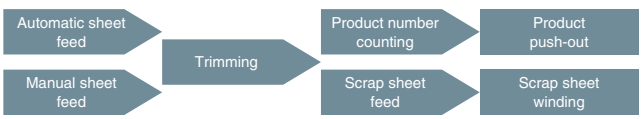
Feature

1. Reduction of labor cost and in-process inventory by automation
2. Dual-use for continuous trimming and one cut forming sheet trimming
3. Automatic trimming positioning device
4. Reduction of mold price and adjustment trimming time by one-line trimming

■ Specification

Model	PLB-2-1.2	PLB-3-1.2
Max. trimming area	600(W) × 600(L)㎜	800(W) × 600(L)㎜
Min. trimming area	360(W) × 300(L)㎜	460(W) × 300(L)㎜
Max. trimming depth	Draw positive 100㎜, negative 100㎜	
Trimming force	450kN	
Sheet feeding method	Grip type chain	
Product ejection	Vacuum unit travelling type, AC servo motor driven	

■ Process



RV type

Rotary vane type vacuum pump

Feature

1. Exhaust characteristics and high efficiency
   - Special design of the inner mechanical parts enable to large exhaust of air efficiently.
   - Self-circulating circuit which catches the exhaust of oil mist completely enables to reduction of oil's consumption and no exhaust duct.
2. Compact and less vibration
   - Compared with the displacement capacity, the machine is small , light and littie vibration.
3. Easy operation and maintenance
   - Simple cunstruction enables to operate and maintain easily.

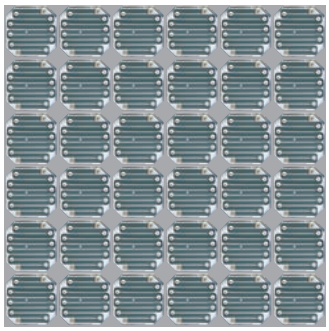
■ Specification

Model	RV-43	RV-83
Displacement	4,000ℓ / min	8,000ℓ / min
Degree of vacuum	10Torr	
Electric motor	7.5kW	15kW
Min. cooling water volume	10ℓ / min	40ℓ / min
Oil volume	7.5ℓ	18ℓ

QRH

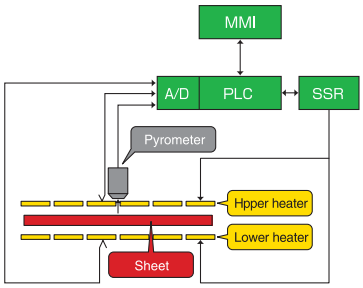
Quick Response Heater

Heater appearance

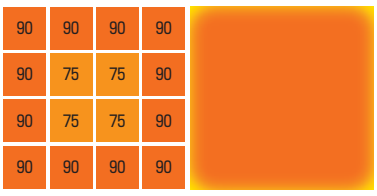


Size : 124×124 600W

Control system



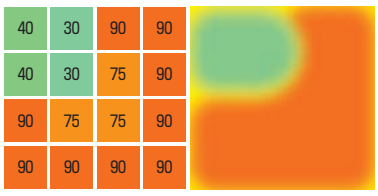
Uniform heating



Heater output pattern

Sheet surfacetemperature distribution

Masking heating (Intensional)

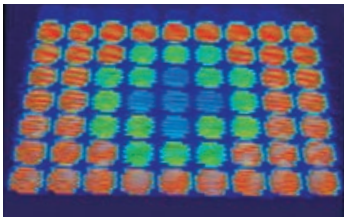


Heater output pattern

Sheet surfacetemperature distribution

Feature

1. Quick response
   - Compared with conventional ceramic heaters, approx. 60 times quicker in responsiveness (In-house data).
   - Energy saving-The heater switches off when not in use
2. Sheet temperature control
   - Sheet temperature correction control through feedback from actual sheet temperature.
   - Sheet temperature control prevents overheating of sheet surface while quickly heating the sheet's inside.
3. Optimum temperature distribution for heat shielding (separate phase controls for each element)
   - Uniform heating for whole surface of sheet.
   - Masking heating (Intensional).



The sales results in the world

As of Jan. 2017

Export 680 machines since 1966

ASANO Global Networks

Asano Laboratories have sold over 5,000 thermoforming
and after treatment machines not only in Japan but 26 countries around the world.

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http://www.djk.co.jp/

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5F, KT Building 1-1-10, Tsukishima, Chuo-ku, Tokyo 104-0052
TEL. 03-3536-0521　FAX. 03-3536-0524

SOJITZ MACHINERY CORPERATION
Osaka Office
6-29, kyutaromachi 1-chome, Chuo-ku, Osaka 540-8689, Japan
TEL. 81-6-6267-4932　FAX. 81-6-6267-4939
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