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5000bottles/h (350ml) Water Production Line

PROJECT BOOK

This project book is an initial one, if there is any change of the project, both two parties should base on the final modification of the technical articles and commercial articles.



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The capacity is from 2000BPH to 36000BPH for hot filling, mid-temp filling, and aseptic cold filling lines.

The capacity is from 2000BPH to 36000BPH for mineral water and pure water product line.

The capacity is from 2000BPH to 20000BPH for carbonated beverage product line.

The capacity is from 8000 to 15000 packs per hour for Tetra Pack and brick pack of aseptic milk packaging product line.

The capacity is from 2000BPH to 30000BPH for beverage with particle product line.

Water treatment equipments.

PET injection machine and blow molding machine

Beverage blending system and washing and sterilizing system

Manufacture equip and quality controller

Manufacture equips

- 1) CNC manufacturing center: assure the precision, coherence and correct of accessories.
- 2) Two sets vertical lathe: make big accessories by ourselves.
- 3) Digital bending machine: assure the precision of difficulty accessories and the coherence of accessories.
- 4) Automatic digital laser cutter: all precision and erose board are dealing with it.
- 5) Lathing, milling, planning, attrition, boring, drilling, cutting board, bending board, and jointing tools: meet all requirement.
- 6) Big sandblasting equipment: used to blast the carbon steel and jointing parts to wipe off the inner-stress and increase the oil painting adhesion.
- 7) Adopt high precision laying-off technnic, it is good for carrying out CAM to assure the quality and working efficiency.



8) Use the precision equipment and advanced casting machine, adopting advanced technology, MEEHANITE, to manufacture the accessories. The MEEHANITE structure is stable and it has long lifetime to keep the precision of parts.

Quality control

We got the ISO9000 quality certification several years ago. Recently, we got the ISO9000:2000 quality certification. Good quality system makes our product quality at the high level.

- 1) All products are designed with CAD
- 2) 6S idea is running through the manufacturing process.
- 3) There is accessories transfer case from manufacturing to installing for accessories to make all accessories no falling during the whole process.
- 4) Main parts of filling valve and capping head are manufactured by CNC and installed in the special installation room to keep the precision and clean of accessories.
- 5) All configuration are used international brand and national famous brand.
- 6) All single machine are running more than 80 hours before delivery the factory. After check by quality department, machines could be delivered.

Technology innovation

- 1) Use stretching structure of special stainless steel deck plate, with O-ring sealing, to decrease the oil leakage of all bearing base, supporting bearing, and other leakage place to zero. It avoids the canker of bearing when disinfection liquid filter.
- 2) The special turning over clamp block the bottle neck to avoid the screw pollution for the traditional rubber clamp. The clamp is stainless steel, sanity and durable.
- 3) Use lifting structure for nozzle of bottle washing system. the nozzle is inserted into inside of bottle to wash in order to assure the washing efficiency. At the same time,



it is decrease the consumption of aseptic water to suit the big bottle producing.

- 4) Specially use automatic washing cup of filling valve and popup and reset drive structure of washing cup. CIP system is controlled by PLC.
- 5) Use disinfection spraying system to sterilize the clamp, thumbwheel, filling valve, capper etc. timing.



II. Basic data of the production line

- Project Company:
- Project name: 5000bottles/h Water product line for 350ml
- Filling products: Water
- Production capacity: 5000bottles/h (350ml) for Water
- Liquid level: meets customer's demand
- Bottle: Raw materials: PET bottle

Type: roundly or squarely (undetermined)

Quantity: 350ml

Empty bottle weight: wait for customer's supply

Specification of the bottleneck: wait for customer's supply

The minimum / maximum diameter: wait for customer's supply

The minimum / maximum height: wait for customer's supply

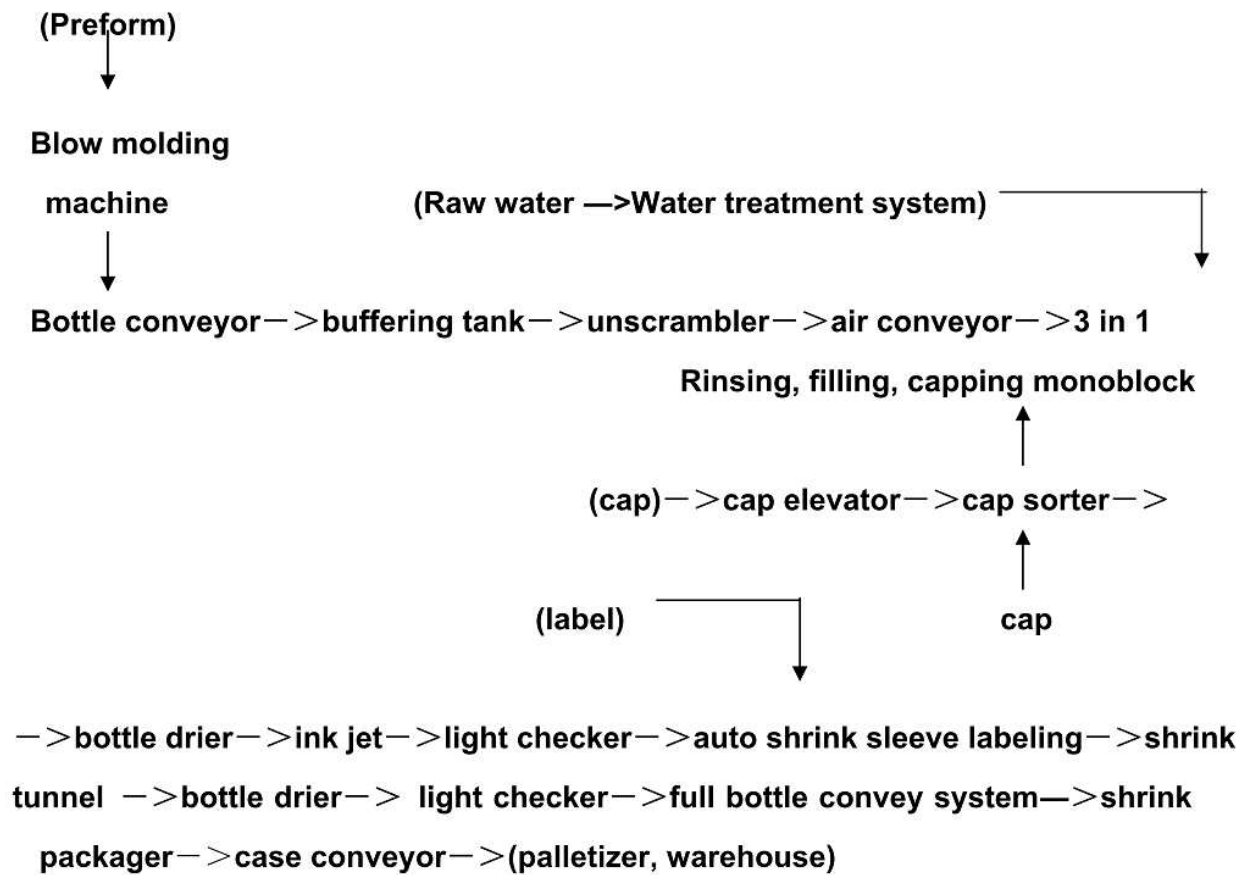
- Bottle cap: wait for customer's supply
- Label: wait for customer's demand
- Bottle arrange type: wait for customer's demand

Remark:

- The final dimension of the machines will be changed according to the customer's requirement.
- All machines are used to packing the product water.
- We may add other equipments according to the customer's requirements. We need the detailed technical requirement supplied by the buyer if the order makes us have to make some change of our machines. The buyer should supply the undetermined information in basic data in the further communication.

III. Technology flow chart

5000bottles/h Water production line



Note: customer furnishes the content in the bracket



IV. Equipments description in the production line

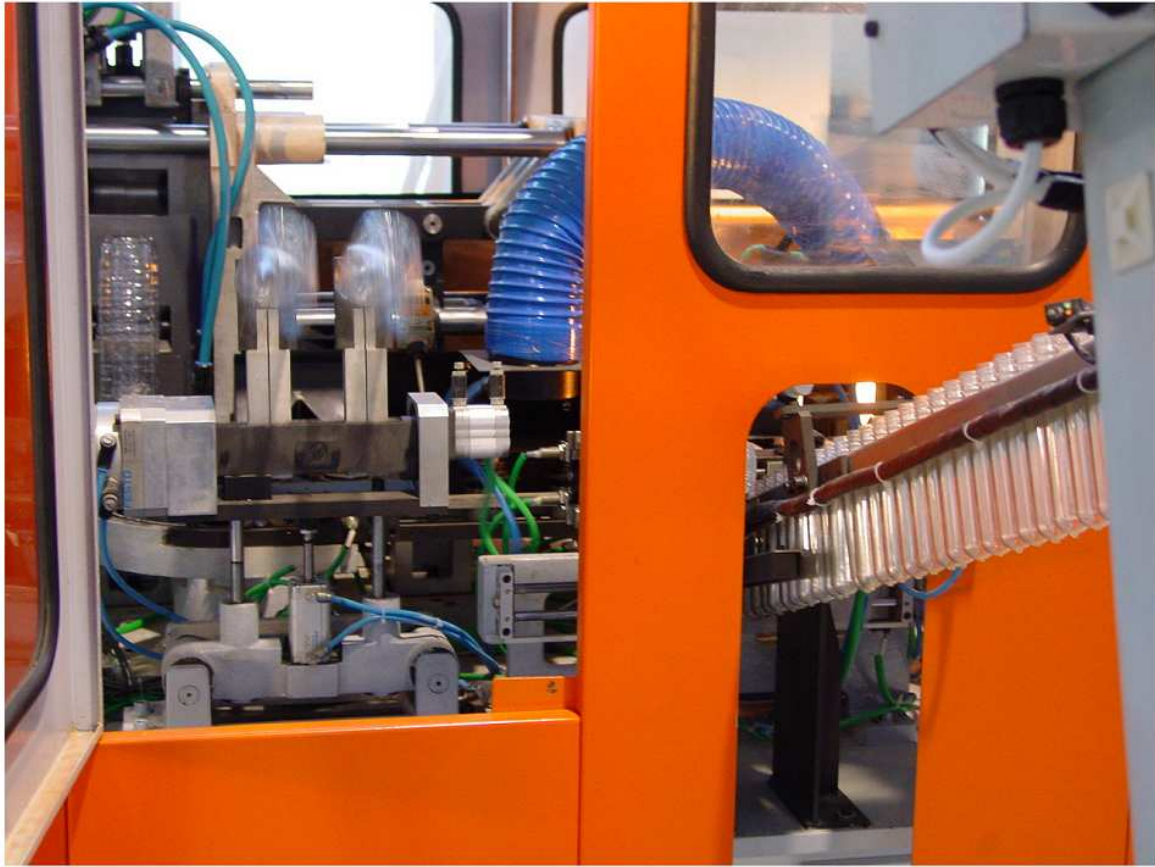
I. Liner blowing machine

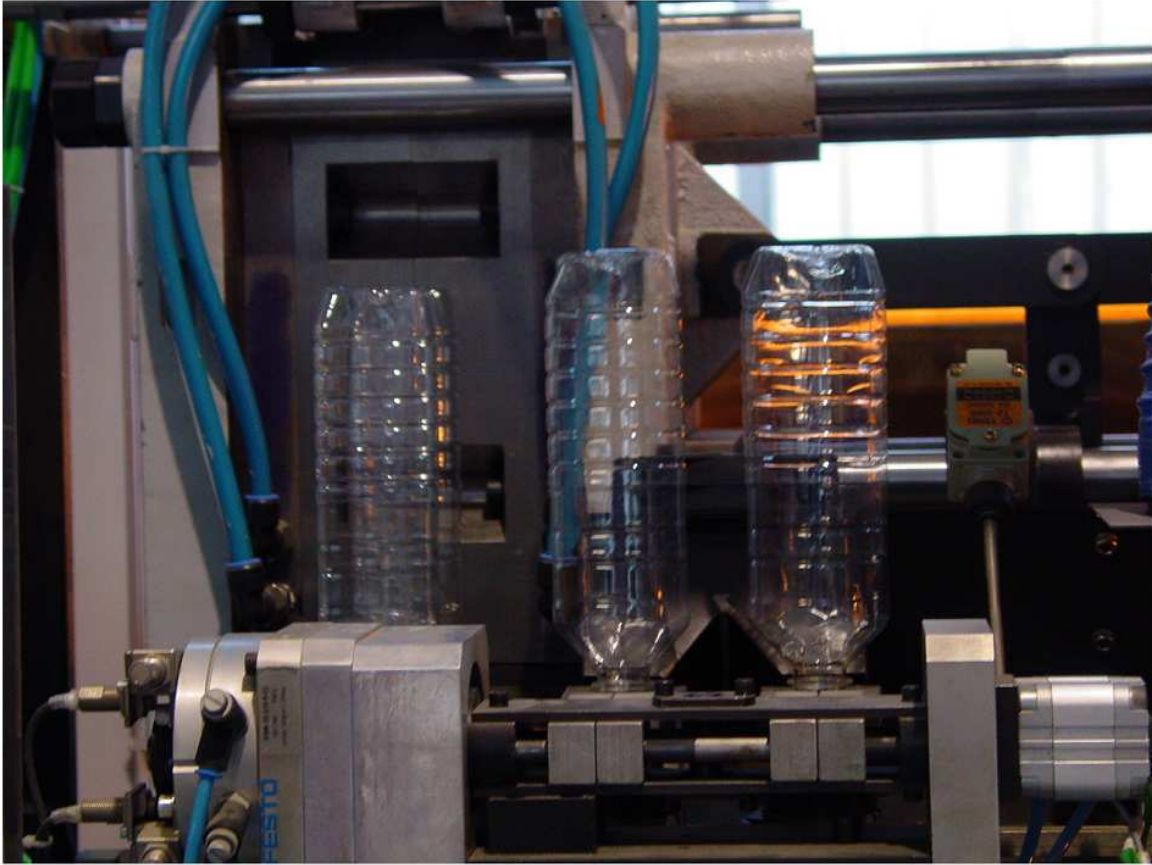












SY series full-automatic pet stretch blow molding machine is the most stable two-step automatic stretch blow moulding machine. It has one to four cavities and the maximum capacity of the products is 2.0L. It can blow bottles in shapes: carbonated, mineral, pesticide, cosmetics, wide-mouth, hot filling, and other packing containers, which is made of plastic of crystalline type, such as PET and PP etc.

- 1).High automatization
- 2).High intelligence: The machine can be controlled through touch screen and running status is shown on it.
- 3).High quality: Steady infrared heating system blowing and highly precise blow-mould closing system ensure quality.
- 4).High speed: 2500BPH (350ml).
- 5).No contamination: Closed production zone, good self-lubrication system avoid contamination.
- 6).Low cost: Low consumption of electricity, air and water.
- 7).High transparency: Easy maintenance, absolute safely, visual inspection, low noise.

Settings:

- a).PLC colour display: OMRON(JAPAN)
- b).Pneumatic parts: FESTO(GERMANY)
- c).Controller of preform transfer: Servo motor National(JAPAN)

d).Other electric parts are all world-famous brand

Features:

- A. Stable performance with advanced PLC.
- B. Conveying preforms automatically with conveyor.
- C. Strong penetrability and good and swift distribution of the heat by letting the bottles rotate by itself and revolute in the rails simultaneously in the infrared preheater.
- D. High adjustability to enable the preheater to preheat preforms in shapes by adjusting the light tube and the length of the reflecting board in the preheating area, and eternal temperature in the preheater with an automatic thermostatic apparatus.
- E. High safeties with security automatic-locking apparatus in each mechanical action, which will make the procedures turn into a state of safety in case of a breakdown in certain procedure.
- F. No contamination and low noise with the air cylinder to drive the action instead of the oil pump.
- G. Satisfaction with different atmospheric pressure for blowing and mechanical action by dividing the blowing and action into three parts in the air pressure diagram of the machine.
- H. Strong clamping force with high pressure and double crank links to lock the mold.
- I. Two ways of operating: automatic and manual.
- J. Safe, reliable, and unique design of the position of valve to make the air pressure diagram of the machine easier to understand.
- K. Low cost, high efficiency, easy operation, easy maintenance, etc, with automatic technological process.
- L. Contamination is avoided for the bottle body.
- M. Ideal effect of the chilling with the chilling system.
- N. Easy installation and starting
- O. Low rejection rate: less than 0.2 percent.

Technical parameter:

TYPE	ITEM	SY-D2500B
CONTAINER	Number of cavity	2 cavities
	Theoretical output	2500 pcs/h (350ml)
	Max.container volume	2.0L
	Max.neck diameter	38mm
	Max.container diameter	105mm
	Max.container height	330mm
ELECTRICAL SYSTEM	Number of lamp	32pcs
	Max.heating power	48Kw
	Installation power	51Kw
	Actual power	16Kw



	consumption	
AIR SYSTEM	Operating pressure	7kg/c m ²
	Low pressure consuming	1100 Ltr/min
	Blowing pressure	≤40Kg/c m ²
	High pressure consuming	2000-2500Ltr/min
CHILLER WATER	Operating pressure	5-6 Kg/c m ²
	Temperature	10°C
	Consuming	5600kcal/hr
	Flow rater	30Ltr/min
MACHINE	Machine dimension	3.0×1.7×2.0
	Machine weight	2.8ton

II. Air conveyor specification



Air conveyor profile

Air conveyor is a bridge between manual platform for feeding bottle and 3 in 1 filling machine. Air conveyor is supported by the arm on the ground; the air blower is settled on the air conveyor. Each inlet of air conveyor has an



air filter to prevent dust coming into. Two set of photoelectric switch settled in the bottle inlet of the air conveyor. The bottle is transferred to 3 in 1 machine through wind.

Main character

1. Except support arm etc. which are made of plastic or rilsan material, other parts are made of SUS AISI304.
2. Air blower is settled with air filter to prevent dust coming into the bottle.
3. There is an adjustable joint settled in air conveyor. Do not have to adjust the height of manual platform for feeding bottle and air conveyor to meet the demand of different bottle, only adjust the height of bottle inlet.
4. There is a block bottle clear device driven by cylinder. When bottle block in the inlet, it clear the bottle automatic, this can avoid breaking the parts of manual platform for feeding bottle.
5. There is a photoelectric switch settled in the bottle inlet.

Main technical parameter

- Type: F-9
- Power : 2.2KW / set

III. Water treatment

s/n	Equipment name and specification	unit	QTY	Material	Remark
A	Increasing pressure controlling unit for water	unit	1		
1	Electric ball valve	set	1		Tai wan SHAKO
2	Raw water tank	set	1	PE	National brand
3	Raw water pump	set	1	S.S.	SOUTHERN
B	Preparing system				
1	Medicine adding device	unit	1		
	Including: dosing pump	set	1		USA
2	Sand filter	set	1		
	Operation screen	pc	1	UPVC	China
	Pipe flow-meter	set	1		
3	Active carbon filter	set	1		
	Operation screen	pc	1	UPVC	
C	RO system (grade 1)				
1	Medicine adding device	unit	1		
	Including: dosing pump	set	1		USA
2	Safe filter	set	1	S.S.	
3	High pressure pump (grade 1)	set	1	S.S.	SOUTHERN



4	RO device (grade 1)	unit	1	group	
	membrane	Pc	6		
	Coat of membrane	pc	3		
	framr	set	1	S.S.	
5	Electric control meter	unit	1		
6	Chemical washing system	unit	1		
D	RO system (grade 2)				
1	Middle water tank	set	1	PE	National brand
2	PH adjustable device	unit	1		
3	High pressure pump (grade 2)	set	1	S.S.	SOUTHERN
E	RO system and water supplying				
1	RO device (grade 2)	unit	1	group	
2	Pure water tank	set	1	304	
3	Pure water pump	set	1	S.S	SOUTHERN
4	UV sterilizer	set	1	S.S.	USA
5	Titanic filter	set	1	S.S.	
6	Ozone generator	set	1	group	
F	Connection system	unit	1	UPVC	

Remark: after received water analysis report, we will give the detail and price.



IV. 3 in 1 rinsing, filling, capping monoblock machine









Profile

The bottle enters into the rinsing part of three-in-one machine through air conveyor. The gripper installed on the rotary disk catches bottle and turns it over 180 degrees and makes the bottleneck face ground. In the special rinsing area, the nozzle on the gripper sprays water to rinse bottle inwall. After rinsing and draining, the bottle turns over 180 degrees along the guide rail and make the bottleneck faces sky. Then rinsed bottle is transferred to the filling part through poking bottle star-wheel. The bottle that enters into the filler is hold by neck holding plate. The filling valve acted by the cam can realize up and down. It adopts pressure filling way. The filling valve opens and begins filling when it moves down and touches the bottleneck, the filling valve move up and leave the bottleneck when it finishes filling, the full bottle is transferred to the capping part through hold neck transition poking wheel. The stop screwing knife holds the bottleneck, keeps bottle upright not rotating. The screw capping head keeps in revolution and autorotation. It can finish a whole capping course including catching, pressing, screwing, discharging through the action of the cam. The full bottle is transferred to bottle outlet conveyor to the next process through poking wheel. The whole machine is enclosed with windows, the height of enclosed window is higher than the peak of the 3 in 1 machine, in the bottom of the enclosed window has return air outlet

Bottle inlet structure

1. Adopt air conveyor system with high efficient filter to feed bottle, this can keep the inside of the filling machine clean
2. With bottle neck holding in the whole course and protect bottle block device.

Rinsing part



1. Except the down framework, the transmission parts and some parts that must be made of special materials. Other spare parts are made of stainless steel 304.
2. The roller bearing is made of stainless steel, the sealing ring is made of EPDM material, and plastic is made of UMPE.
3. The gripper is made of stainless steel, the position where hold the bottleneck is also made of stainless steel, compared with the traditional rubber gripper, it is much hygiene, durable, and no quick-wear parts, the screw parts of the bottleneck can avoid being polluted by the rubber gripper.
4. The gripper equipped with high-efficient spray nozzle, it can develop to any position of inwall of the bottle, and can save rinsing water. There is a cover above the spray nozzle which can prevent water spilling; and there are regulatory recycle slot and recycle pipes under the nozzles.
5. Bearing is made of stainless steel, the sealing ring is made of EPDM material, and plastic is made of UMPE.
6. Rinsing time can be guaranteed for 4 seconds.
7. By adjusting the height of the rotary parts to adapt for different bottle height
8. The motivation is derived from the driven system in the framework passed by gear.
9. The supplying of rinsing water is controlled by solenoid valve.

The transition poking wheel

The hold bottleneck poking wheel is made of high-quality stainless steel. We can meet the demand of adapt different bottle height by changing the bottle change parts; when the change of bottle is not big, do not need adjust.

Filling part

- 1) Adopted Germany igus anti-corrosion non-maintaining bearing that can reduce the pollution of filling to the environment.
- 2) The rotate plate is made of SUS AISI304, large flat toothed bearing.
- 3) The pressure mechanical valve is introduced the advanced foreign design with a fast filling speed, no hygiene corner pocket, a few sealing parts, and precise liquid level control. The whole valve is made of 316L stainless steel.
- 4) The filling system has a CIP circulation system to wash the pipeline and fake-cup used for cleaning filling valve. This system can clean the juice pipe, liquid tank and filling valve etc. effectively.
- 5) This filling system has an automatic temperature control system.
- 6) The filling valve opens and begins filling when it moves down and touches the bottleneck, the filling valve move up and leave the bottleneck when it finishes filling.
- 7) The juice supply adopts the automatic pneumatic valve magnetic liquid-level switch to control the liquid tank automatically.
- 8) Sliding bearing is adopted Germany igus anti-corrosion non-maintaining bearing, that can reduce the pollution of filling to the environment. Rolling bearing made of stainless steel, the sealing ring is made of EPDM material, plastics is made of UMPE.
- 9) The motivation of the filler is derived from the driven system in the framework and passed by gear.

Capping part

This unit is the highest degree of accuracy of 3 in 1 machine, it is important for the machine to run stably and the product quality.

Characteristic of the screwing capper as follows:

- 1) Introduce most advanced cap sealing technology called France "ZALKIN ". With the help of expert from



institute of electromechanics and mechanical engineering of Shanghai Communications University, we successfully designed. For example: I) the screwing capping head cam (the main parts which can assure the machine run stationarity), while adopting "ZALKIN" technology, the expert improve the authenticity and stability of the machine focused on dynamics and kinematics. II) Screwing capping head (the main parts which can assure the capping quality), the expert improve the design of magnetic steel, this improvement can reduce the defective rate of capping better and the traditional character of easy to set and adjust the torque of screwing capping head.

- 2) The screwing capping head is dual-purpose design; it is suitable for flat cap and sport cap.
- 3) The device which can take out the reverse cap and prevent the reverse cap passing is settled in the cap-falling guide.
- 4) A group of photoelectric switches are settled on cap-falling guide. The machine will stop when there is no cap on the guide.
- 5) A bottle inlet detect switch is settled on the screwing capper.
- 6) There are aseptic nozzles between the transition poking wheel and filling parts to rinse the product rested in the bottleneck screw parts.
- 7) There is a cap-lock cylinder in the joint between the cap-falling guide and poking cap plate. It is realize that no feeding no cap.
- 8) By adjusting the height of the rotary parts to adapt for different bottle height.
- 9) The motivation of the screwing capper is derived from the driven system in the framework and passed by gear.
- 10) The main parts of the screwing capper are processed by the digital-control processing center

Bottle outlet star-wheel

The poking bottle is poking body star wheel.

The bottle outlet conveyor

- 1) The driven motor is frequency control, synchronized with the 3 in 1, prevented the bottle from turning over.
- 2) There is a detective photoelectric switch settled in the chain shelf. The machine stops when a bottle falls down.

Framework

- 1) The stainless steel with stretched structure (reversed-drawing technology), cooperate with the "O" sealing ring, that make the possibility of leakage of the parts such as bearing flat and support axle etc. down to zero.
- 2) The framework is welded and high quality carbon steel and dealed with anti-corrosive treatment. The surface is covered by stainless steel plate (AISI304).
- 3) The transmission system is settled blow the framework and driven by gear.
- 4) The driven gear is composed of stainless steel gear wheel and nylon gear wheel with a cross arrangement.
- 5) Equipped with the device of overload protection, it can guarantee the safe of the machine effectively.
- 6) The top and around of the Framework is enclosed by the sealing window with transparent Lucite. And an entrance of preformed hole for ozone according to the buyer's requirement.

Control system

- 1) The electric control cabinet is made of 304 stainless steel.
- 2) Way adjusting the speed: Frequency control.

- 3) Operation way: Pro-face interface. The speed of production, output count, type of faults, faults points etc are showed on it.
- 4) The main components all adopt famous brand: Mitsubishi, Siemens, Omron, etc.

Technical parameter

- Type: XGF14-12-5
- Working location: rinser 14, filler 12, capper 5
- Production capacity: 5000BPH (350ml)
- Air source pressure: 0.7MPa
- Air consumption: 0.8M³/min
- Rinsing water pressure: 0.2-0.25 MPa
- Rinsing water consumption: 1.2 t/h
- Filling way: gravity filling
- Host power: 1.5KW
- Voltage rating: 380V
- Dimension: 2200*1550*2650 (L*W*H) mm
- Weight: about 2000Kg

V. Cap elevator (air)





Introduction

There is a detector switch in the cap sorter, when the cap is not enough, when the detector on the cap sorter get a signal of lacking-cap, the cap elevator starts. The caps in the tank fall into the air by the function of the vibration motor and then pass through the air conveyor of the cap to the cap sorter. It can change the size of the tank inlet by the flashboard; this can adjust the speed of cap falling.

Technical parameters

- Fan motor: 380V, 0.55KW
- Vibration motor: 380V, 60W

VI. Bottle drier



Introduction

Adopt high-pressure blower, discharge the air from a small gap, to blow off the water on the bottle body. The gap is laid incline, which can make the whole body touch the air. It consist of high-pressure blower, blowpipe, frame, control device, surge tank etc.

Technical Parameter

Dimension: 500mm*500mm*800mm

Vortex Air Pump: 5.5kw

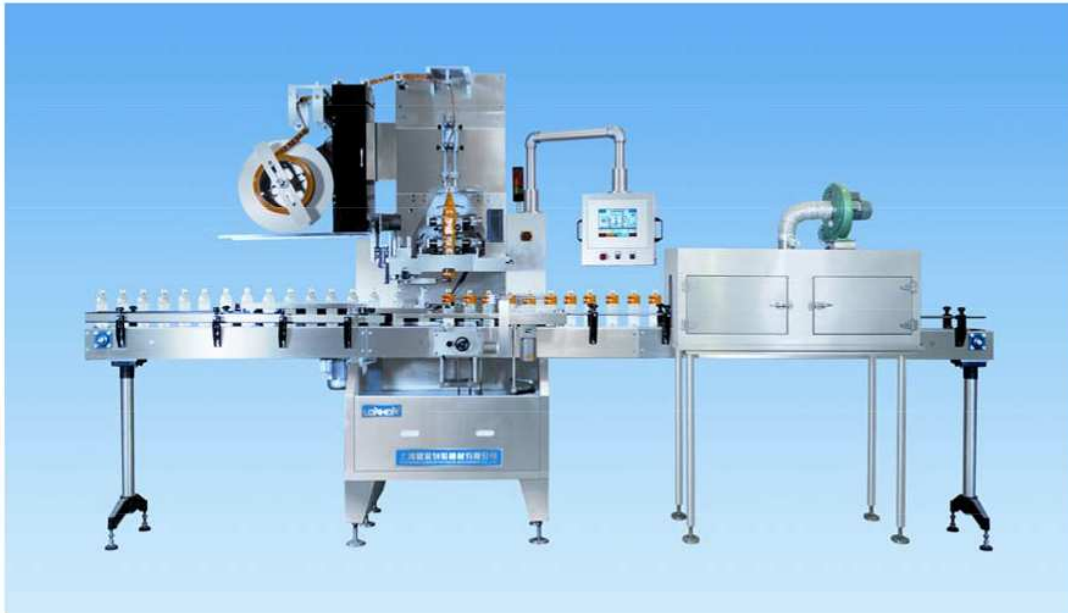


VII. Ink jet



- Type: Vediojet 43s
- Definition of Injecting Quality is good.
- It uses IP53 industrial protection grade stainless steel chassis.
- It uses inner gear pump and wear well.
- It is Simple and easy to understand operation interface, it has good message edit and found function.
- It could be injected 1or 3 line for different kind of information, GC, bar code, logo and so on

VIII. Shrinkable Inserting label machine with shrinking tunnel (TB-6000)





Profile:

- a) Advanced industrial man-machine interface controller, the key electric components are products of world famous companies;
- b) Specially designed knife plate is change-free with the rated specification;
- c) The machine adopts novel pressure-label-insertion mode, it proves reasonable and convenient;
- d) Central colume can freely adjust height up and down;
- e) Adopts a high sensitivity optical fiber sensor ensuring accurate length of cut.

Technical parameter:

- Capacity: 6000BPH
- Label diameter: 28-125(mm)
- Bottle diameter: 28-125(mm)
- Label insertion length: 30-250(mm)
- Material: PVC/PET
- Label thickness: 0.03-0.13 (mm)
- Power: 1.5KW (380V 50Hz)
- Shrink tunnel power: Confirmed by heating mode
- Dimension (L*W*H): 2100*850*2000(mm)
- Weight: 2200Kg

Main supplier of components:



SERVER SYSTEM			
MAN-MACHINE INTERFACE	MITSUBISHI (JAPAN)		
PLC CONTROLLER		MITSUBISHI (JAPAN)	
FREQUENCY INVERTER		MITSUBISHI (JAPAN)	
MOTOR		PANASONIC (JAPAN)	
PHOTOELECTRIC SWITCH	SICK (JAPAN)		
CONTACTOR		SCHNEIDER (FRANCE)	

IX. PE film shrinking wrapper



Full automatic shrink packaging machine cannot only be solely used, but used simultaneously with other equipment to form packaging production line. It can automatically array, aggregate and align PET beverage bottle or other similar articles, then package it with shrinking film, finally produce finished products after shrinking by heating, cooling and forming. The packaged product is firmly bound with excellent appearance, which can be opened conveniently. Therefore, it is widely used in industries such as foodstuff, medicine, chemical and other light industrial products.

Main technical parameters

1. Operating voltage: three phase five line system 380V/50~60Hz
2. Working pressure: 0.6~0.8Mpa
3. Shrinking room: L*W*H=1800*650*450(mm)
4. Package efficiency: 0-10 packs per min (normal working speed)



5. Sealing and cutting temperature: 140°C~160°C
6. Shrinking temperature: 200°C~280°C
7. Package material: PE
 - Film roll width: ≤580mm
 - Film thickness: 0.06~0.12mm
 - Film diameter: ≤400mm
8. Working noise: ≤65Db
9. Total power: 21KW
10. Air consumption: 100NL/min
11. Total weight: 1500kg
12. Boundary dimension (standard): L*W*H=6500*3200*2100(mm)
13. Dimension: main machine: 1300*1250*2200 mm
Shrinking machine: 4150*1050*1800 mm

Configuration

Isothermal sealing cutter	USA TEFLON anti-stick layer
PLC	Japan OMRON
Touch screen	Japan OMRON
transducer	Danmark holip
Pneumatic component	taiwan UNIQUC
sensor	Korea Autonics
contactor	German siemens
belt	USA teflon
recycling structure of hot shrinking tunnel	German Krones



v. Quotation and equipment list for 5000bottles/h Water Production Line

S/N	System name	Equipment name	Metric capacity	QTY	Price In USD	Total price In USD	Remarks
1.	Bottle feeding system	Liner Bottle blowing machine	2500BPH(350 ml)	1 set	72,500	72,500	ASG
2.		High pressure air compressor		1 set	about 60,000	about 60,000	
3.		Air drier group		1 set			
4.		Low pressure air compressor		1 set			
5.		Blowing mould (for 350ml)		1 set	4,500	4,500	
6.		Air conveyor			1000 /m	about 60,000	According to layout
7.		Manual platform for feeding bottle		1 set	3,500	3,500	ASG
8.	Water treatment system	1 st R.O.	3 T/H	1 set	About 52,000	About 52,000	Will be changed according to water report
9.	Bottle filling system	XGF 14-12-5	5000BPH(350 ml)	1 set	65,000	65,000	ASG
10.	Cap feeding system	Cap elevator	15000BPH	1 set	7,500	7,500	Air blowing
11.		Bottle dryer		1 set	5,600	5,600	ASG
12.		Lamp checker		1 set	450	450	ASG
13.		Shrinkable inserting label machine with shrinking tunnel(TB-6000)	6000BPH	1 set	52,000	52,000	
14.		Ink jet		1 set	21,000	21,000	



15.		PE film shrinking wrapper	0-10packs/min	1 set	32,000	32,000	
16.		Full bottle conveyor system			590 /m	about 60,000	According to layout
17.		Case conveyor after shrinking wrapper			1000 /m	about 68,000	According to layout
18.							
Total price (CIP ASHGABAD) <small>+ 15% of international transport costs and other expenses totaled.</small>					648,700		

Installation and commissioning of 10% of the total