



- Dairy Plant
- Beverage Plant
- Food Plant
- Pharmaceutical Plant



PRODUCT GUIDE

vol.22



IWAI KIKAI KOGYO CO.,LTD.

Head Office 3-17-10, Higashikojiya, Ota-ku, Tokyo
144-0033, Japan
TEL.03-3744-1111 FAX.03-3743-5030

Osaka Branch Honmachibashi Tower., 3F, 1-5, Honmachibashi,
Chuo-ku, Osaka-shi, Osaka
540-0029, Japan
TEL.06-6926-4711 FAX.06-6926-4801

Kyushu Office Vitoria Bldg.,3F, 3-13-28, Hakataeki-higashi,
Hakata-ku, Fukuoka-shi, Fukuoka
812-0013, Japan
TEL.092-481-1241 FAX.092-481-1239

《GROUP ENTERPRISE》
IWAI PHARMA TECH CO., LTD.
IWAI PLANT SERVICE CO., LTD.
IWAI MACHINERY (KUNSHAN) CO., LTD.
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IWAI KIKAI KOGYO CO.,LTD.



**Aspiring to be a corporation
which contributes to human life,
society and environment**

IWAI KIKAI KOGYO CO., LTD. has gained a firm footing as a leading company of liquid type food plant engineering from its foundation.

We have a belief that the pursuit of technology supports human life in this contemporary society where contributions to “human life”, “society” and “environment” are required. With this belief in mind, we have been assaulting “safety” and “capacity” and have been developing technologies that take full care to environment such as “energy saving” and “resource saving”.

We will continue to aspire further breakthrough in the field of food, beverage and pharmaceutical as a pioneer of liquid processing as well as a total plant engineering company.

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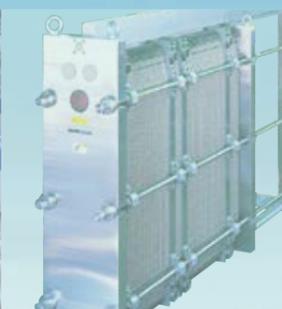
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Shell & tube type heat exchanger



We offer a shell & tube type heat exchanger that can be used in a wide range of ways according to the usage, such as beverages with high fibrous content or high viscosity products. This heat exchanger is able to keep the damage in heat sensitive products to a minimum through quick heating and cooling, and since the gaskets used are few in number, the flavoring and lingering of scents in the product can be improved.

Features

[Improving the heat conductivity using a Special processing tube]

The heat transfer tubes, which use corrugate tubes, and dimple tubes have a high coefficient of heat transfer due to high accelerating effect on turbulent flow, and also possess high processing capacity as well as excellent detergency despite being a compact equipment.

[Measures against flavoring]

Due to the few number of gaskets, the flavoring and lingering of scents can be reduced.

[Space-saving design]

The length of the main unit may be selected according to the installation space.

[Reduction of maintenance load]

Due to the few number of seal gaskets, maintenance tasks including inspection and replacement can be significantly reduced.



Use/Specification

Model	Use	Processing amount (L/H)	Body maximum allowable working temperature (°C)	Pressure-resistance (Mpa)		Shell diameter (A)	Heat transfer pipe diameter (φ)	Nominal length (m)	Wetted part material
				(Top) Tube	(Under) Shell				
STPS Type (Multiple flow type)	Low viscosity fluid~Medium viscous food Milk, milk beverages, coffee, teas soft drinks, fruit juice, etc.	1,000	145	1.0	50	10	2m,3m 4m,6m	SUS316L Equivalent	
		46,000		0.75	200	14		SUS327L1 Equivalent	
STR Type (Energy saving, thermal regeneration type)	Low-viscosity liquid which doesn't form scale Improved cleanability type Water, coffee, tea, etc.	12,000	145	1.0	100	14	4m 6m	Tube SUS316L Equivalent	
		40,000		0.75	150			Shell SUS304/316L Equivalent	
STPF Type (Multiple flow type)	Fiber-Containing Liquid Fiber-Filled drink, etc. Pulp, aloe-vera etc. less than 20mm	4,500	145	1.0	100	14	4m 6m	Tube SUS316L Equivalent	
		27,000		0.75	150			Shell SUS304 Equivalent	
STC Type (For CIP)	For CIP	10,000	145	0.65	140	13.8	1m 2m	SUS304 Equivalent	
		35,000		1.0					
STS Type (Single flow type)	Solid material-containing liquid, medium and high viscosity liquid Puree, Jam, Mayonnaise, etc.	5,000	150	1.0	40	20	4m 6m	SUS304 Equivalent	
		65			32	SUS316L Equivalent			
		12,000			100	50			

STPS Type



STR Type



STPF Type



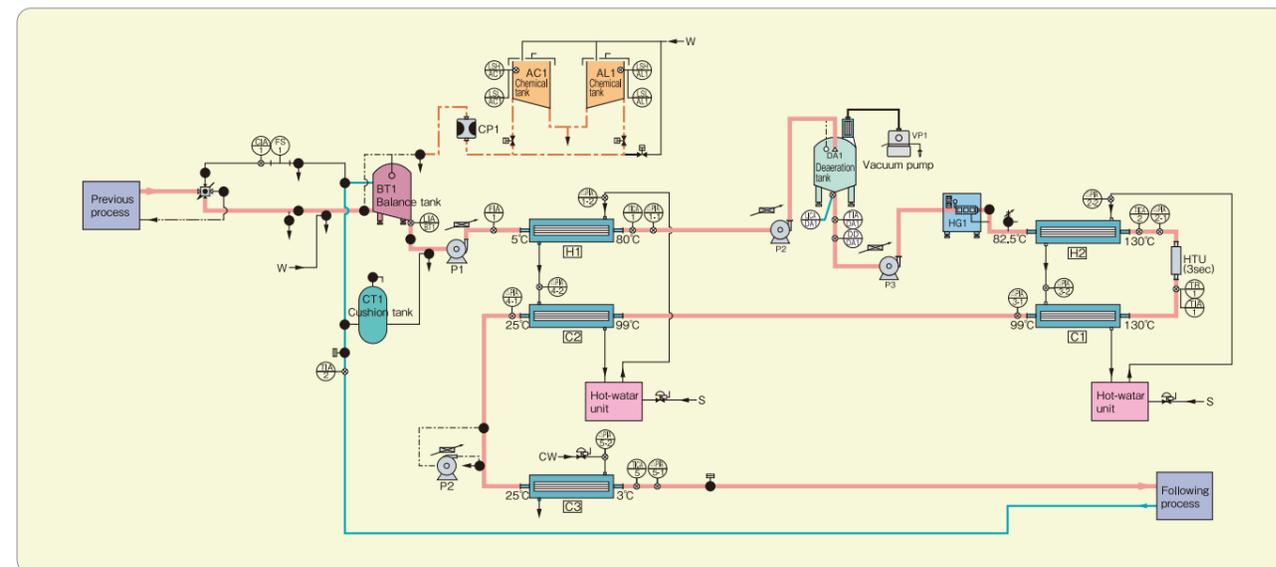
STC Type



STS Type

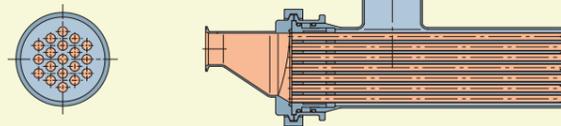


System example (Cooling beverage sterilizer)

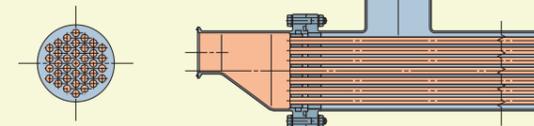


Structure

STPS type / Multiple flow type



STC Type / For CIP



STR Type / Thermal regeneration type

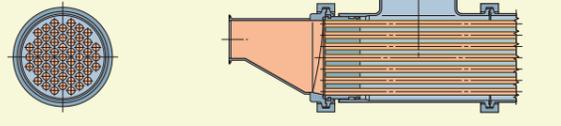


Plate type heat exchanger

Compact plate type heat exchangers excel in heat efficiency and are widely used in food plants. IWAI's adding to its lineup a new plate type heat exchanger, optimized for high viscosity products, which had been a challenge in the past, and offers further improvement of the production process by improving the product quality.

Features of the quick bond less plate [HA3] [HA6]

- Gasket can be quickly mounted without tool thanks to partial fixing system.
- The fluid can uniformly flow through the oblong plate structure with smoothly rounded shoulders avoiding sudden widening of the dispersion part.
- The fluid passage is waved to increase heat transfer coefficient and withstand high pressure. This helps reduce plates and smooth fluid flow.



HA6

Features of the new plate [HB3] for exclusive use with high viscosity products

- **Achieves a uniform flow within the plate**
Effectively utilizes the heat transfer area to reduce the number of plates.
- **Reduction of pressure loss**
With the wider plates, the contact points can be set to reduce the pressure loss even with high viscosity liquids.
- **Improvement in product quality**
The taste of the ingredient can be brought out to the full without losing its physical properties using rapid heat treatment, such as heat shock or the reduction of operating pressure, and productfriendly ideal processing and yield rate improvement are made possible.
- **Improvement in maintenance**
The use of New Quick Bondless method reduces the mounting time of the gasket by 50% compared to conventional methods.



Easy installation by simply aligning the snap part of the gasket with the plate and pushing it in.



□ HB3



□ HA3, HA6



□ GHX, CHX, BHX



□ GHX-N



Specification

Model	HB3	HA6	HA3	GHX·GHX-N	CHX	BHX	HAS
Heat-transmission area	0.34m ²	0.65m ²	0.35m ²	0.65m ²	0.32m ²	0.21m ²	0.019m ²
Size	455mm×1,140mm×0.8t	400mm×2,000mm×0.8t	300mm×1,500mm×0.8t	470mm×1,470mm×0.8t	328mm×1,190mm×0.8t	253mm×963mm×0.8t	100mm×488mm×0.8t
Material	SUS316 Equivalent						
Pressure-resistance	1.0MPa			0.65MPa		1.0MPa	
Body heat-resistant	150°C						
Gasket material	EPDM (HNBR)	EPDM (HNBR, Silicon rubber)		EPDM (NBR, HNBR, Silicon rubber)			EPDM
Frame	SS400 / SUS304 Equivalent Stainless lining finish				SUS304 Equivalent		
Max number of sheets	350 Sheets	500 Sheets	350 Sheets	500 Sheets	350 Sheets	200 Sheets	150 Sheets
Bore	76mm	76mm	64mm	100mm	64mm	50mm	10A
Flow rate	1~35m ³ /h	3~80m ³ /h	1~35m ³ /h	3~100m ³ /h	1~35m ³ /h	0.8~20m ³ /h	0.1~1.0m ³ /h

* The first kind pressure vessel structure conformance

(Gasket HNBR is CHX excluded)

[PTFE coated plate gasket]

Tefket®

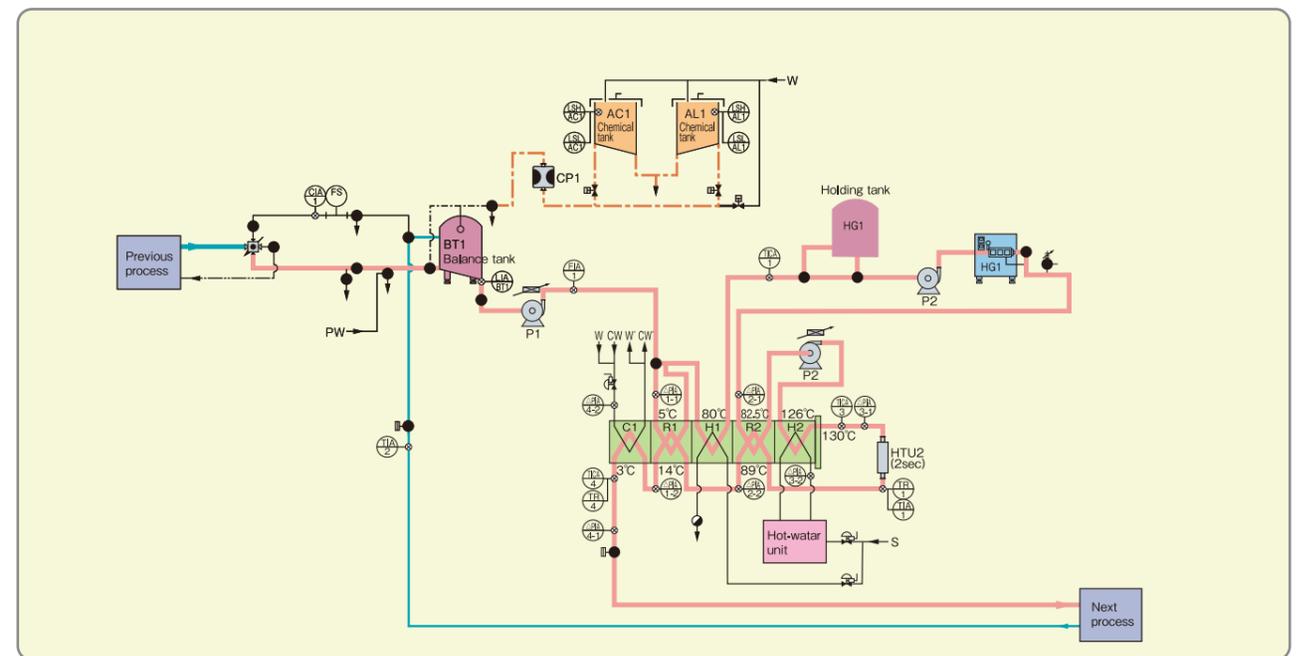
- By coating the EPDM of the gasket's main unit with PTFE, flavoring of the product can be reduced.
- Compared to conventional gaskets, it has higher chemical resistance, preventing surface breakaway due to factors such as carbon desorption, and any emission of contaminants.



Compatible models : GHX·HA6
Food Sanitation Law No. 85 fit (JAPAN)



System example (Milk·Milk beverage sterilizer)



Direct heating type sterilizing equipment

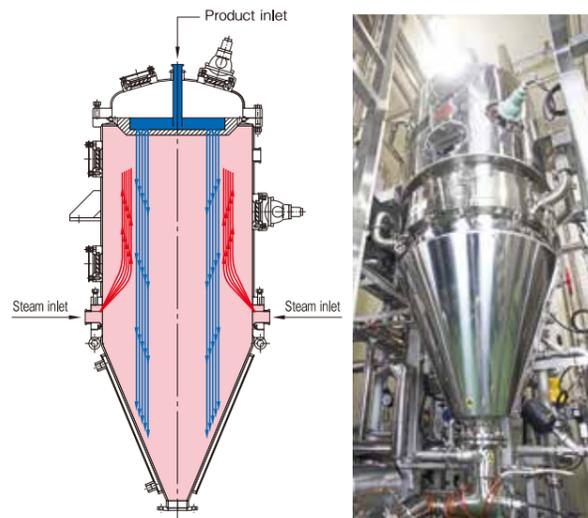


Infusion system

The infusion system of IWAI, a pioneer of sterilizing equipment in food plants, is a system that makes sterilizing possible in low viscosity liquid foods and high viscosity food products as well as products containing solid bodies.

Features

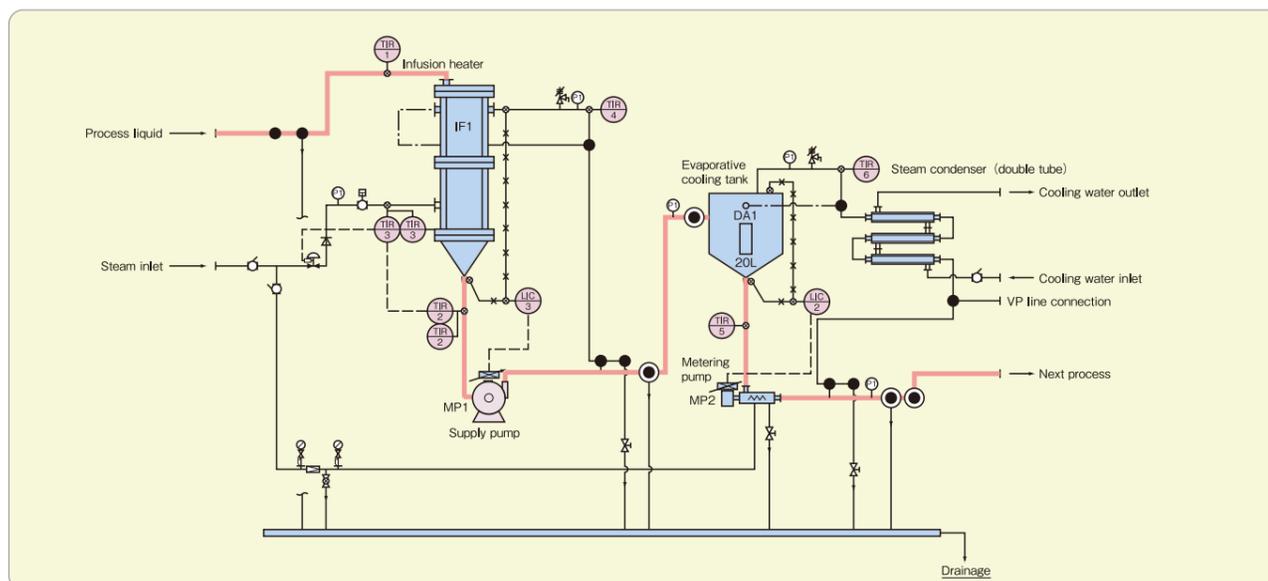
- By dropping the product into a clean steam atmosphere, the product is directly exposed to the steam, resulting in instantaneous heating, which minimizes the effect of the heat on the product.
- The sterilizing temperature is determined solely by the steam pressure, minimizing the difference in temperature between the steam temperature and the product.
- Being capable of heating reliably by devising the product nozzle and the steam outlet port, this heater reduces the occurrence of scorching.



Specification

Ability	1~4m ³ /h	4~7m ³ /h	7~10m ³ /h	
Temperature specification	78 ~ 150 ~ 80°C			
Unit External dimension (mm)	Width	2900	3200	3500
	Depth	2300	2600	2900
	Height	3400	3500	3800
Process piping bore (mm)	38	50	64	
IF heater outside diameter (mm)	450	650	800	
Evaporative cooler outer diameter (mm)	800	1100	1400	
Vapor condensation method	Plate type/Shell & tube type heat exchanger			

System example



Injection system

This is a direct heating type sterilizing system that uses a compact and structurally simple steam nozzle.

Features

- Clean steam is blown directly into the product to instantaneously heat the product, minimizing the effect of the heat on the product.
- The use of a steam nozzle with a simple structure allows for a system configuration that is more compact and inexpensive compared to the infusion system.

Steam nozzle equipped with an electric actuator

This is a steam nozzle that can be easily adjusted due to the use of an electric actuator in the adjustment regulating part.

Features

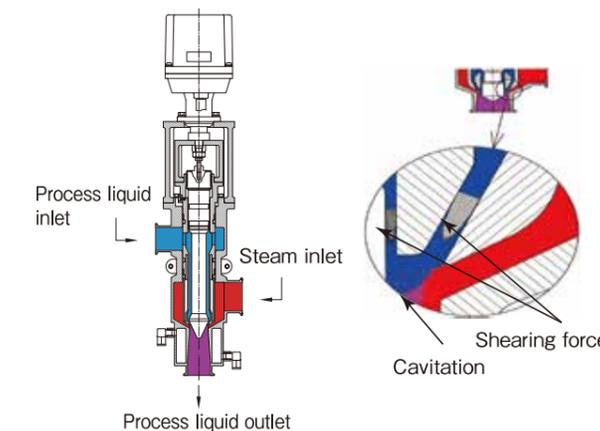
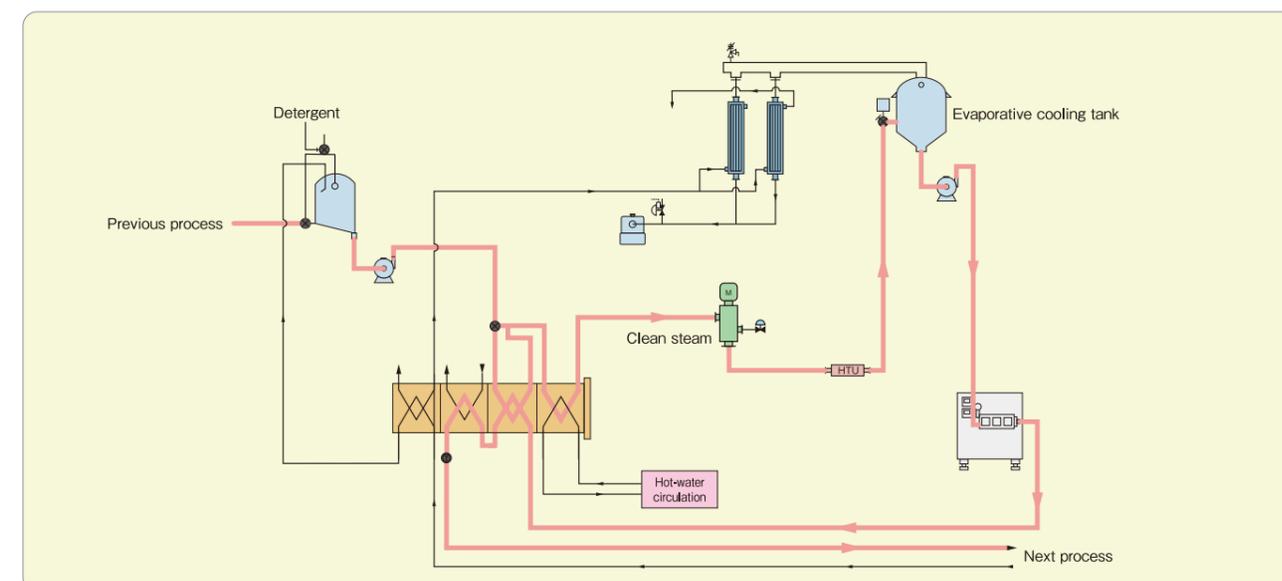
- Fine adjustment can be made easily by using an electric actuator for the opening adjustment of the steam side, which has a large impact on the heating property.
- It has a high repeatability for the opening readjustment after the disassembly maintenance.
- It is standard equipped with a cooling jacket that is effective in preventing scorch at the nozzle tip.
- During CIP, the electric actuator can be temporarily actuated for a higher cleaning flow rate.
- Adjustment according to the physical properties and temperature specifications of a wide variety of products can be made in a short amount of time.

Specification

Bore	Process liquid flow rate m ³ /h	Heating steam amount kg/h	Connection bore		
			Process liquid inlet	Process liquid outlet	Steam inlet
25mm	1.4~4.9	190~680	25mm	25mm	38mm
50mm	4.3~16	590~2300	50mm	50mm	64mm
76mm	12~43	1640~5980	76mm	76mm	76mm

* Process liquid temperature 80°C → 150°C (ΔT = 70°C) case to raise the temperature

System example



Scraped surface heat exchanger (Thermocylinder)



Thermo cylinder has been used over many years for the main unit of sterilizing equipment as a scraped-surface heat exchanger with many possible uses including the heating and cooling of high viscosity products.

Features

[High heat transfer efficiency]

- It realizes a high heat efficiency even in high viscosity products (also products containing solid bodies) by scraping the heat transfer surface.

[Achieving a long hour operation]

- Even with a high temperature difference of the heating and cooling media, the occurrence of scorching, solidification, etc. can be prevented, enabling a long hour operation.

[Aseptic structure]

- This structure excels in sanitary property, with excellent cleaning property that supports aseptic specifications and pressure vessels.

[Supporting options corresponding to the purpose of use]

- The variety of scrapers that corresponds to the product's property enables optimum product processing.

Use

- Heating and cooling of ketchup, sauce, jam, flour paste, processed cheese etc.

※We will select the best model and material depending on the physicality of product, processing capacity and the installation space.



Standard specification

Type	The number	Heat-transmission area (m ²)	Cylinder length (mm)	Cylinder bore size (mm)	Scraper outside diameter (mm)	Residual fluid amount (L)	Power (KW)	Bore
KB05S	1	0.08	440	70	40	1.6	0.75~2.2	38mm
KB05W	2							
KB05T	3							
KB11S	1	0.36	1000	130	75	10	1.5~2.2	50mm
KB11W	2				100	7		
					75	10		
KB12S	1	0.77	2000	130	100	12	2.2~5.5	50mm
					75	19		
					100	12		
KB12W	2	0.68	1200	205	75	19	3.7~5.5	50mm
					150	21		
					175	14		
KB21S	1	1.21	2000	205	150	34	3.7~11	50mm
					175	21		
					150	34		
KB21W	2	0.68	1200	205	175	14	3.7~5.5	50mm
					150	21		
KB22S	1	1.21	2000	205	150	34	3.7~11	50mm
					175	21		
KB22W	2	0.68	1200	205	150	34	3.7~11	50mm
					175	21		

Structure

[Improved seal stability]

- We changed the position of spring for mechanical seal to realize a structure that is not affected by expansion and contraction due to rapid cooling.

[Improved cleanability]

- Cleaning time is much shorter than the standard type. (Based on internal test using high viscosity products)

[Reduced maintenance load]

- A flange guide makes the assembly easier, as we can put heavy objects on the guide.
- Improved efficiency of maintenance by fixing the seal ring.



Electric (Joule) heating type sterilizing equipment



Joule heating type sterilizing equipment is a sterilizing system that directly passes current through the product to make itself a heat-generating element, allowing for uniform heating in a short amount of time regardless of the product's viscosity, and is able to bring the best out of the product's flavor.

Features

[Improved quality by reducing thermal history]

- The equipment is able to rapidly heat food product regardless of its viscosity, and thus avoid food thermal deterioration. In result, it can produce high quality food product.

[Reduced damage to food product]

- Less pressure loss enables production with reduced physical damage to food material.

[Yield improvement]

- Since there is no heat transfer surface in the heating area, the retention liquid amount can be drastically reduced.

[Improvement in work environment]

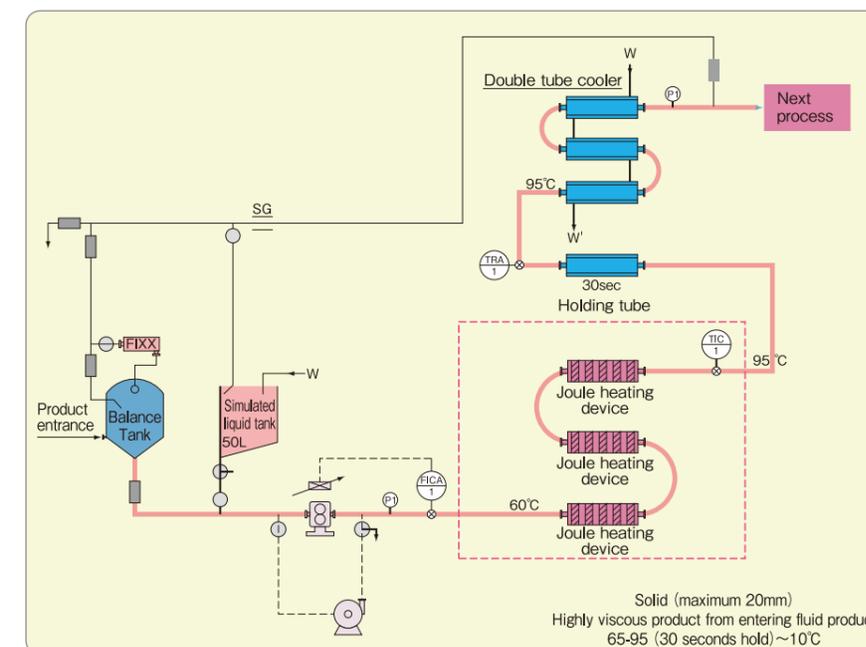
- The absence of heating medium leads to an improved work environment.



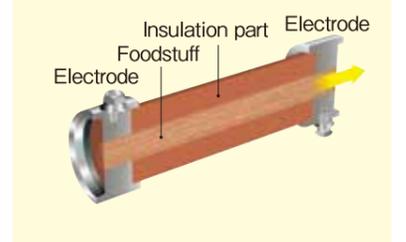
Standard specification

Processing amount	50L/H~3,000L/H	
Heater output	5.5、15、25、50、70、150kw (Corresponding to a maximum 250kw depending on the combination.)	
Maximum usage pressure	1.0MPa	
Maximum usage temperature	150°C	
Preheating and cooling	Low viscosity ~ small solids containing	STPS type (multi-flow) shell & tube type heat exchanger or double tube type heat exchanger
	Large solids containing	STS type (Single flow type) Shell & tube type heat exchanger
	High viscosity ~ small solid material containing	Scraped-surface heat exchanger

System example



Joule heating image diagram



Laboratory Unit: Sterilizer/pasteurizer for beverage



For use with beverages, we offer the minimal capacity tube-type AUHT-Labo Unit that can pursue product flavor as close as possible to the actual machine. With a very compact design, the unit is ideal for the development and research section of beverage, food and dairy product manufacturers.

Features

[The laboratory unit ideal for beverage production plants]

- Sterilized PET bottle filling samples can be produced through combination with the PET bottle filling machine.
- Adequate measures are taken against the drop in temperature by vacuum insulating the holding tube.
- Its sanitary structure ensures that CIP and equipment sterilization can be conducted.

[Compact design]

- Ultra-small design at 1600W × 900D × 1219H. Moving its installation location can be done easily even in a laboratory where space is limited.

[Simplification of utilities]

- The heat source only uses electricity, enabling operation in an environment without auxiliary equipment such as a boiler.

[Excellent user friendliness and display recording of trend data]

- Temperature setting and other main operations can all be configured from a PC. Trend data of prototypes can be displayed and recorded on the PC, and then accurately reflected when designing the actual unit.

[Improvement of yield rate and measures against flavoring]

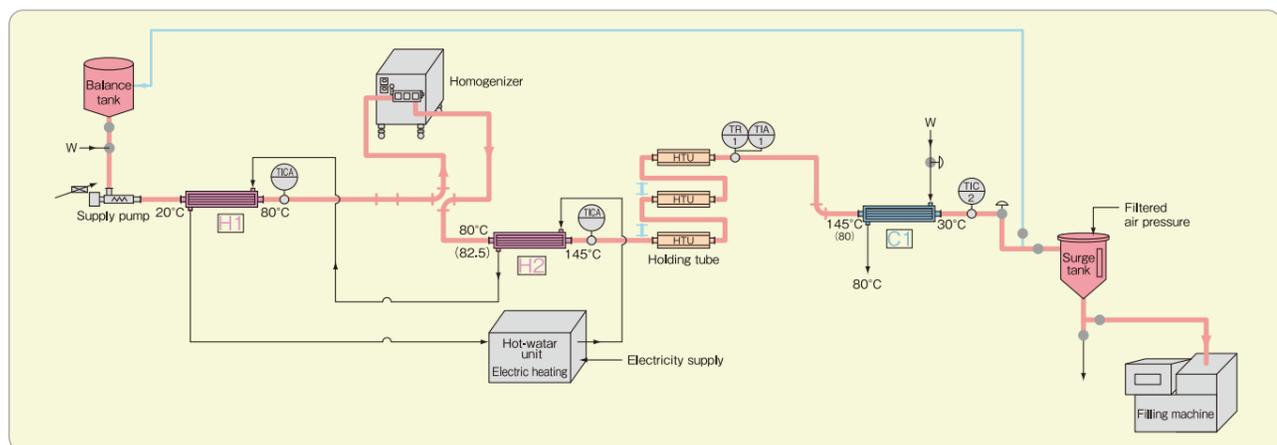
- A tube-type heat exchanger is used as the heat exchanger. We are considering the improvement of yield rate through high liquid substitution capability and measures against flavoring when experimenting with a variety of products by utilizing a smaller liquid contact area of the gasket.



Specification

Ability	60L/h
Temperature specification	20~145~30°C (Temperature and holding time to setting can be changed by breed)
Target variety	Low-viscosity fluids (tea beverage, fruit juice beverage, vegetable beverage, milk-based beverages, etc.)
Grade	Aseptic
Main pipe size	6mm
Heating method	Indirect heating method using a tube-type heat exchanger (Direct heating method also available as an option. * However, a heat source using steam is required.)
Power supply	AC200V×3φ×20kw
Compressed air	50NI/min
Weight	500kg
Wetted part material	SUS304 Equivalent (SUS316 Equivalent)

System example



Laboratory Unit: Direct/indirect sterilizer/pasteurizer



This is an aseptic compatible test unit equipped with an indirect heating function using a plate and a direct heating function with the injection method using a steam nozzle. It is favored by many customers as an easy to use test unit that is optimal for product development and high in versatility.

Features

[Support for a wide range of test conditions]

- A wide range of product tests can be realized by modification of the pipeline configuration, temperature specification due to the capacity variable and the retention time setting. It is also possible to select installation of homogenizer after sterilization process.

[Optional direct method or indirect method]

- Direct/indirect combination type can be easily configured by switching the piping.

[Compact and user friendly design]

- This easy to use unit keeps its installation area including the HG to a minimum and is excellent in user friendliness.

[Customization options]

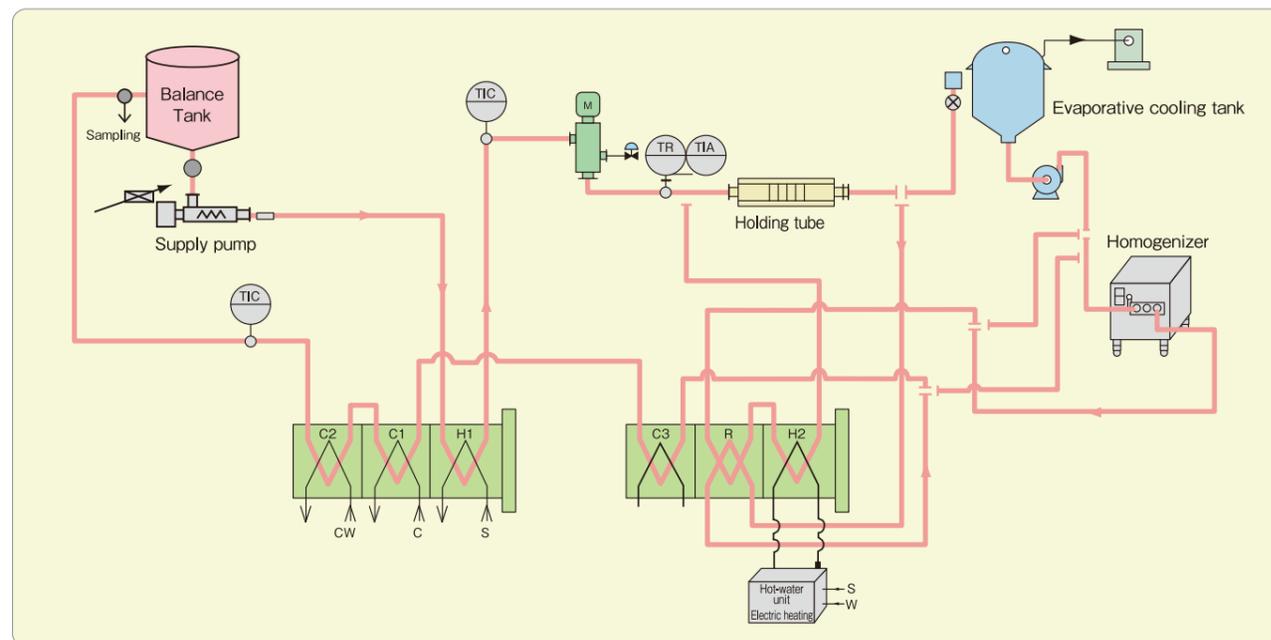
- With this unit as the base, customization options are available to match customer needs.



Specification

Ability	20~180L/h
Temperature specification	Direct : 20~78~150~90~80~30~5°C / Indirect : 20~85~130~140~95~90~70~30~5°C
Target variety	Low-viscosity fluids (tea beverage, fruit juice beverage, vegetable beverage, milk-based beverages, etc.)
Grade	Sanitary / Aseptic
Main pipe size	8mm, 12mm
Heating methods	Direct : direct heating method using steam nozzle / Indirect : indirect heating method using plate type heat exchanger
Power supply	AC200V×3φ×20kw
Compressed air	50NI/min
Wetted part material	SUS304 Equivalent (SUS316 Equivalent)

System example



Multi-liquid blending system (IL-Blender)



We offer a liquid blending system purposed for saving the space of the preparation equipment and improving the yield rate.

Features

[Multi-liquid blending]

● Blending of more liquids compared to before has been made possible by managing the ingredients by mass. With this system, it is possible to mix 1 to 2 auxiliary ingredients and 2 to 6 auxiliary ingredients of very small amounts for 1 main ingredient, in addition to the normal 2 liquid blending.

[Quality control]

● Stable quality control can be implemented by monitoring the amount used for each ingredient by mass, as well as continuously monitoring the post-blending product by Brix.

[High precision]

● Start time is shortened with the constant differential pressure system, and the precision of the final product can be controlled within ± 0.05 Brix with the use of an electric control valve with high positioning precision (1/2500).

[Aseptic support]

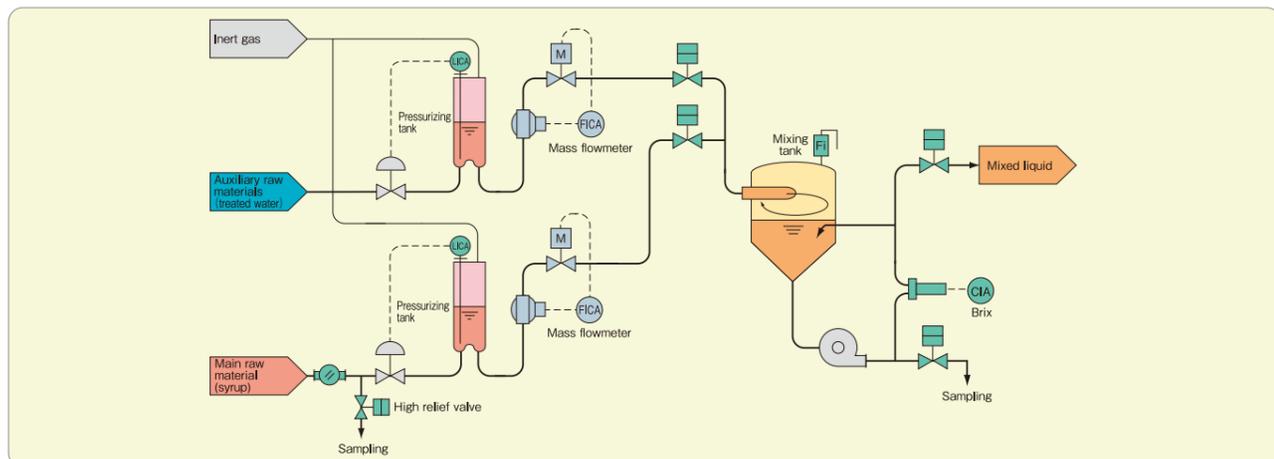
● By constructing the unit with an aseptic supported equipment, support for sterilization is made possible. Even the processes after sterilization can be simplified, and space-saving as well as yield rate can be improved.



Specification

Model	ILB-2-12	ILB-2-20	ILB-2-30	ILB-2-38
Ability	6~12m ³ /h	10~20m ³ /h	18~30m ³ /h	28~38m ³ /h
Blend ratio	1 : 2~1 : 8			
Syrup sugar content (solids)	20~60Brix			
Accuracy (steady state)	± 0.05 Brix			
CIP Flow rate	10m ³ /h	16m ³ /h	23m ³ /h	
Power supply (AC200V)	10kw 60AF/60AT	10kw 100AF/75AT	12kw 100AF/75AT	15kw 125AF/125AT
Compressed air	For process	0.6MPa×MAX600L/min (NORMAL)		
Wetted part material	SUS304 Equivalent (SUS316 Equivalent)			
External dimension (mm)	Width	2300	2400	2500
	Depth	2000		
	Height	3200		

System example

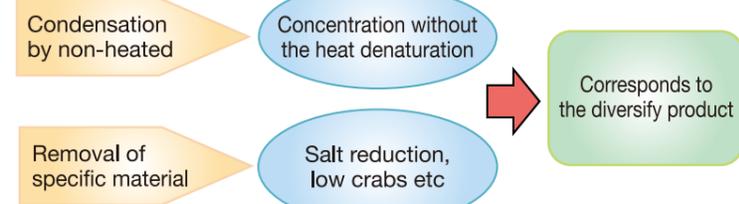


Membrane separation system



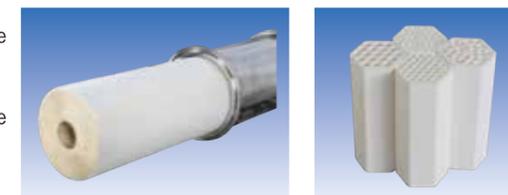
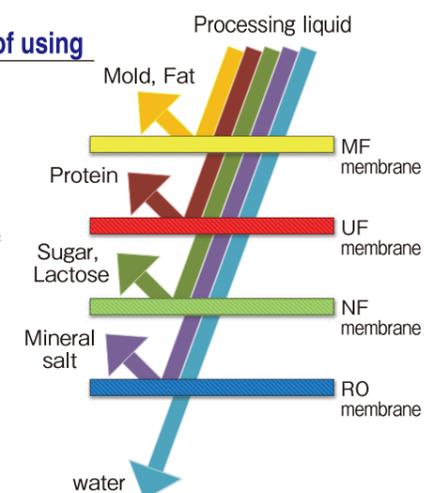
We offer a membrane separation system which corresponds to the rationalization of production process and the request of pursuit of quality.

Features



Each lineup and example of using

- RO membrane
Condensation of raw milk and defatted milk, desalination of seawater etc.
- UF membrane
Condensation of salt rejection of whey, etc.
- NF membrane
Preprocessing recovery of the cheese production, etc.
- MF membrane
Condensation of fungal forms, clarification of juice, etc.



Presentation of experimentation

We have a variety of experimental equipment, the experiments are available to adapt customer's request.

● Flat membrane type spin flow cell experimental equipment

- To provide perfect conditions for sample test of concentration, breakaway and purification using RO, NF and UF membrane.
- The experimental equipment is most compact, it is available to experiment on the desk.
- It is available to the test from 20ml (minimum)
- It is available to exchange easily the membrane using float membrane type cross flow test cell.
- It is available to do the kind of test with a variety of membrane.



● Spiral membrane experimental equipment

- To provide perfect conditions for the collection of data for scale-up of concentration, breakdown and purification using RO, NF and UF membrane.
- It is available to offer the most suitable equipment using the same membrane as actual equipment.



● Ceramic membrane experimental equipment

- To provide perfect conditions for sample test of concentration, breakaway and purification in the field of UF and MF.
- It is available to continuous operation using same equipment to concentrate, purify and recovery, it is superior for operability.
- This experimental equipment is compact, it is available to test on the desk.
- When the test of scale-up, it is available to offer the optimal equipment using larger ceramic membrane experimental equipment.



Powder suction dissolving system



We offer a powder dissolving system that is ideal for dissolving large amounts of powder ingredients such as the preparation process of dessert equipment. By sucking the powder from the tank bottom, the task can be optimized and the environment can be improved.

Features

[High speed dissolution]

● Since the powder is put into the liquid by sucking from the bottom of the powder dissolution tank, the powder can be efficiently dissolved at high speed.

[Improved product quality]

● Improvement in product quality can be expected, as the dissolving product will have little foam entrapment since it is dissolved inside the powder dissolution tank in a vacuum state.

[Improvement in work environment]

● The powder is not scattered, as it is sucked and transferred towards the bottom of the powder receiving tank by decompressing the powder dissolution tank during powder input. Also, the work environment inside the preparation room can be improved by installing the portable powder receiving tank in a separate room.

Specification

Powder feeding section	Powder receiving tank Powder valve
Dissolution section	Powder dissolving tank [200~10000L] Agitator (bottom surface stirring system/stirring blade: semi-open)
Vacuum pump unit	Vacuum pump Sound deadening separator
Options	Steam valve (directly blowing in filtered steam)

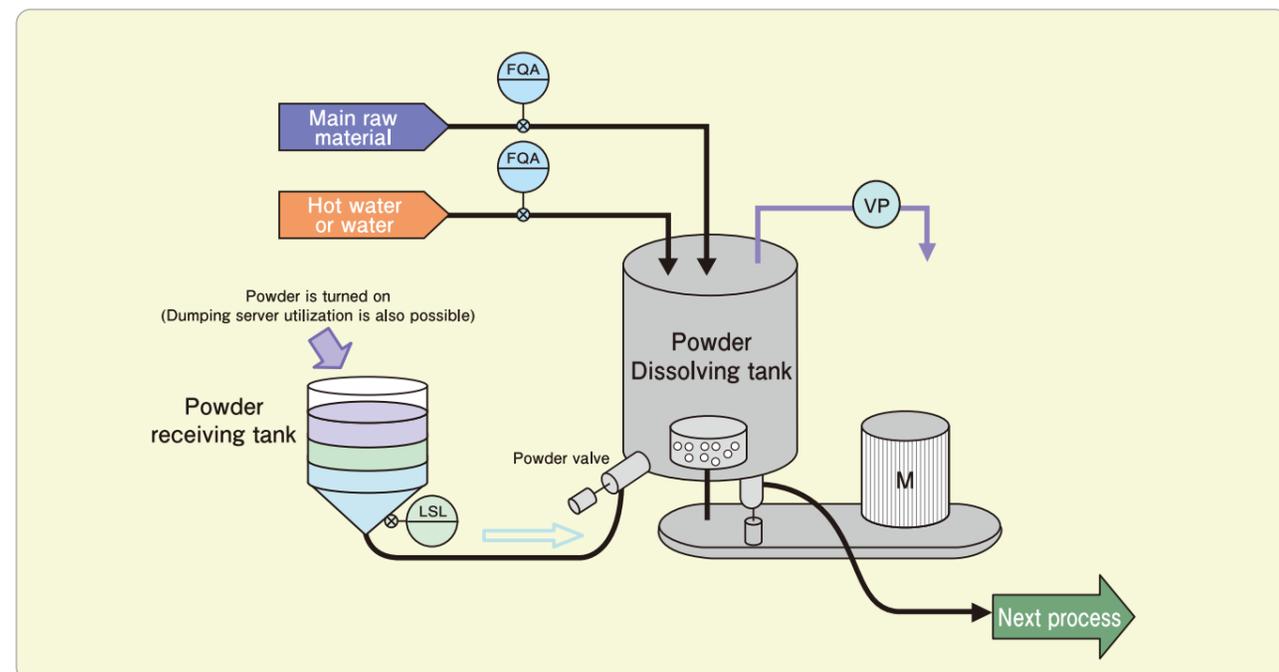
*We will choose the tank capacity and motor output after confirming the working conditions.
(Also supports testing using IWAI's laboratory unit.)



Use

- Dissolution of powdered skim milk, sugar and other powder based ingredients.
- Grinding and dissolving of solid bodies are also supported by using cutter blades (replaceable).
- An optional upper mixer can also be installed to support high viscosity products.

System example



Carbonate dissolving system (IL-Carbonator)



We offer the IL-Carbonator, a carbonic acid dissolving machine that achieves a high dissolution rate with a simple structure. This is an aseptic specification machine with excellent sanitary property and user friendliness, in addition to high performance and steady production leveraging IWAI's wealth of experience and expertise in beverage plants.

Features

[With high CO₂ addition precision]

● We ensure stable, high quality products with high CO₂ addition precision.
Addition precision (during stable operation): within ±0.1 (v/v)

[High washability and maintainability]

● By using a simple structure of an entirely one way method and no circulating passages, it is high in washability and maintenance is made easy.

[Support for carbonated beverages containing solid bodies]

● Support also for products containing solid bodies equivalent to crushed pulp.

[Aseptic support]

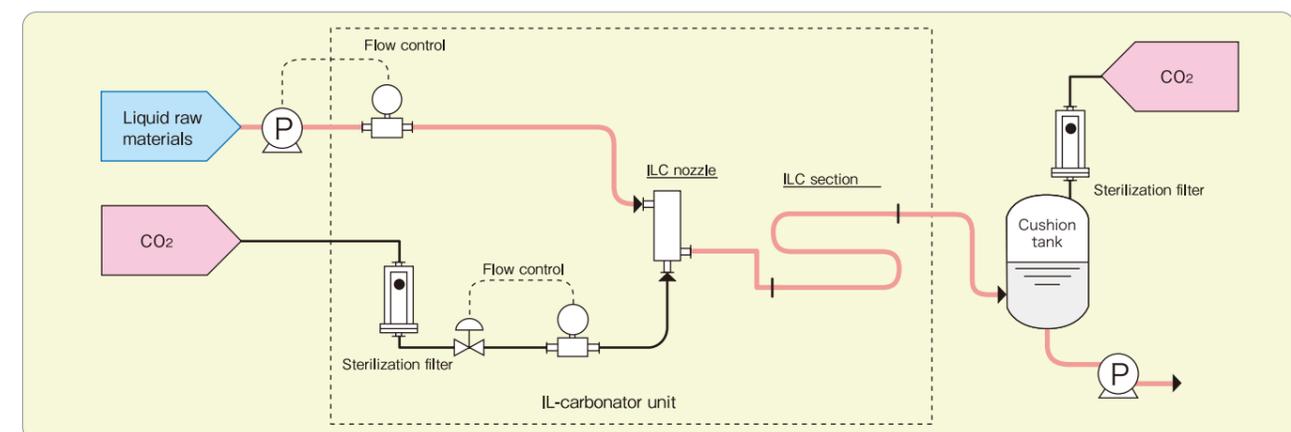
● We have achieved aseptic specification with an equipment structure and control program that ensures sterilization. A machine sterilization method (steam/hot-water) appropriate for the product can be selected.



Specification

Model	ILC-1	ILC-2	ILC-3
Ability	6~13m ³ /h	10~24m ³ /h	18~36m ³ /h
Size (W x D x H)	2,950 x 1,400 x 2,400mm		
Product temperature	1~20°C		
GV Value	1.5~5.0v/v		
Solid support	Crash pulp Equivalent		
Supply pressure	0.7MPa, CO ₂ :0.8MPa		
Wetted part material	SUS316L Equivalent		

System example



Mobile tank system



IWAI's mobile tank system is a system that carries out liquid processing of raw material input, preparation, sterilization, filling and cleaning, etc by moving the tank with the liquid in it.

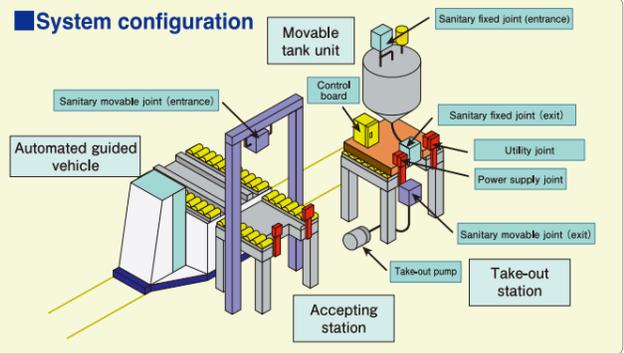
Features

- It has made possible a significant reduction in manifold, piping and valves, etc. That is linked to the improvement of yield.
- The work of "switching varieties" is simple, making it possible to prevent contamination.
- "Zoning" can be done for each processing step, thereby achieving improvement in environment conservation and management simplification.
- It is possible to accurately grasp the state of production, because production is done collectively in the mobile tank, making it possible to carry out progress management and process control with greater ease than using the conventional systems.
- It is possible to carry out sanitation-related maintenance with ease, because production is done collectively in the tank.
- Recombination processes, development test, function improvement can be achieved at a lower cost than the conventional systems.



Specification

Capacity	~10,000L
Tank shape	Round vertical sanitary tank Installed as flat panel (on the pallet), so that it could accommodate forklifts and various types of transfer methods Equipped with a tank valve for formulation
Connection nozzle	Sanitary joint / Aseptic sanitary joint
Pressure-resistance	0.18MPa
Sterility	From the general sanitary level to the sterile level
The viscosity of the product	1×10 ⁻³ ~5Pa.s (It has fluidity)
Ambient temperature	1~40°C (No freezing nor condensation)



Flow sheet

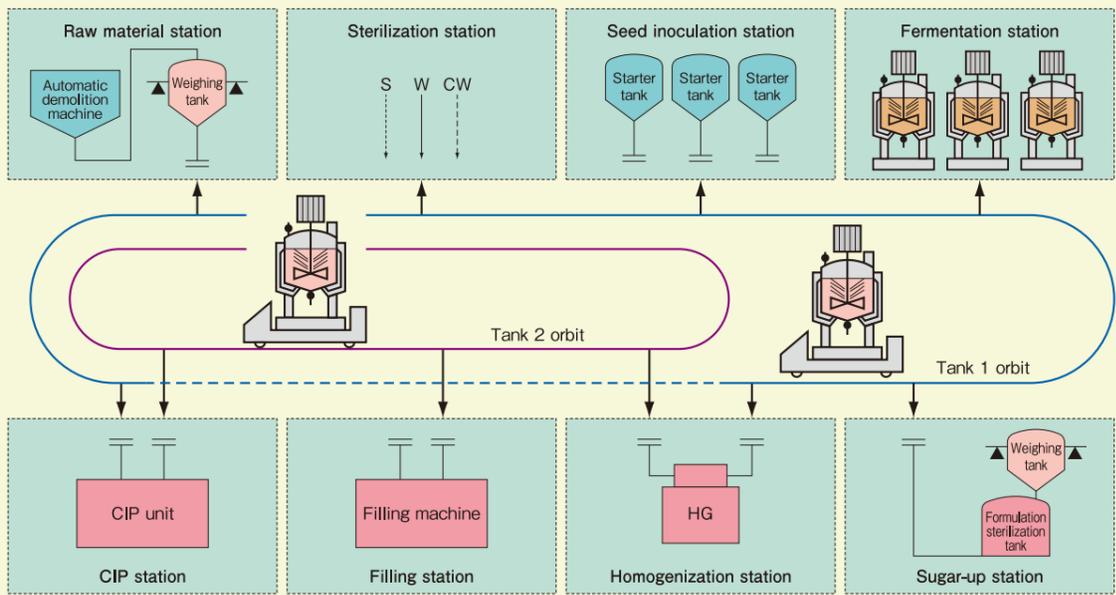
《Transport system: Automated guided vehicle》

Tank 1: Moving the fermentation tank

Raw material input→Sterilization→Seed inoculation→Fermentation (Including cooling)
→Adding sugar→Homogenization (Delivery in tank2)→CIP

Tank 2: Moving the surge tank

Accepting the process liquid after homogenization
→Filling→CIP



Contamination-free switching system



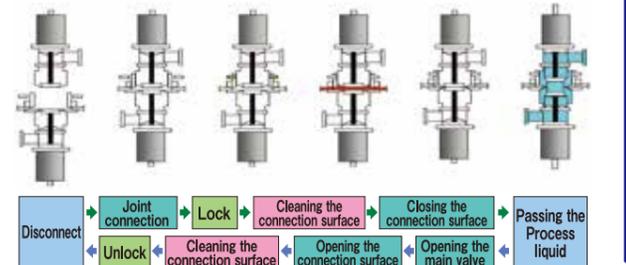
By connecting only the necessary equipment with one pipe and cutting off unnecessary equipment, this system maintains a simple plumbing line and keeps the connecting parts in a hygienic condition, thereby to prevent contamination. We propose this system as a "tube-path-switching system" to replace the valve, a system that is not subject to bacterial cross-contamination.

Aseptic sanitary joint



Features

- It is possible to use it for the line after the disinfection-sterilization process for which it is critical to maintain a sterile state.
- It is possible to switch without any risk of contamination by completely disconnecting the "product line" and "washing line".
- With an extremely simple internal structure, there is no residue of the internal fluid.
- There is no secondary contamination, because the wetted parts are completely isolated from the outside by using a diaphragm in the shaft seal part.
- By preventing separation by "self-locking" when the joints are connected, it maintains the sterile state.



Swing Bends

Specification

Fitting standard	Clamp/Screw (ISO standard-compliant)
Body material	SUS304 (SUS316)
Surface finish	Internal surface #400, external surface #200 polishes
Gasket material	EPDM, NBR, Silicon
Pressure-resistance	1.0MPa

Operation method

Type	Model	Position detection
SB100	Manual	None
SB200	Manual	Limit switch
SB300	Automatic	

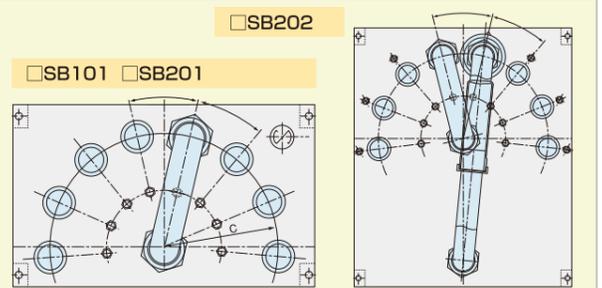
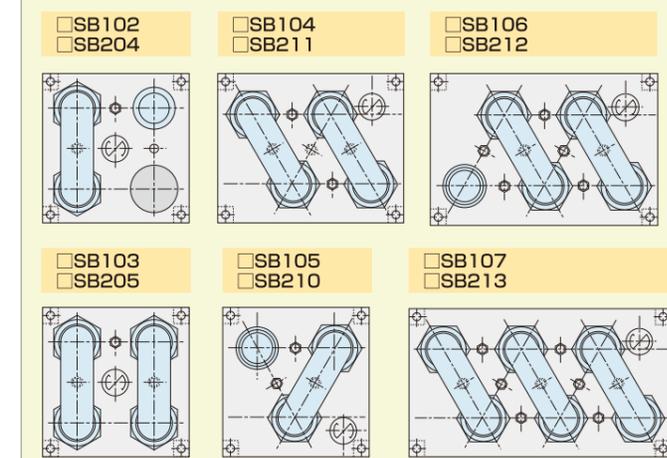


Right: SB207X
Left: SB205

Outline drawing (SB311R/Automatic, SB207X/Manual)

Bore	A	C	W
38	332	122	335
50	410	168	413
64	440	178	443
100	600	266.8	603

Lineup



Single use CIP unit

We are proposing a compact single use CIP unit which is easy to use as a more reliable cleaning equipment, one that is indispensable to safe and secure manufacturing.

Features

- The tankless type is suitable for space-saving plant.
- As it can change detergent concentration with great flexibility and wash with a certain concentration, it can wash equipment with dirt hard to clean, as well as equipment that emits odors.
- As fresh detergent is used at all times, dirt can never be carried over.
- You can reduce time and energy loss, because it can be installed in the vicinity of the equipment to be cleaned.
- It can also easily cope with the expansion of CIP line that accompanies facility expansion.
- Its ease of maintenance and durability have been improved, because the heater had adopted the "Shell & tube type heat exchanger".
- When you add a CIP-dedicated controller "SC-4", you are able to keep a more substantial CIP operation record.

Options

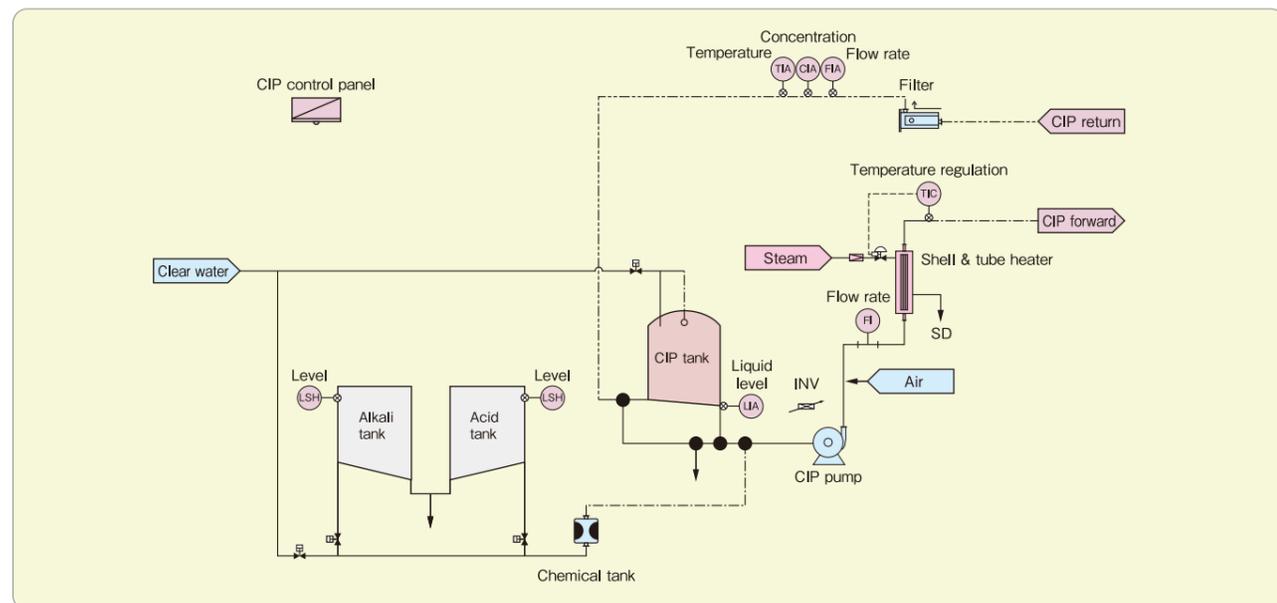
Controller	SC-4 CIP controller
Tankless single use CIP system	Saving the space, water and detergent by using the tank to be cleaned as a buffer tank.
Adding the recovery tank	By recovering the wash water and rinse water, storing it in the recovery tank and utilizing it a second time for the next CIP, it is possible to reduce the usage of detergent and water, as well as discharge.
The shell & tube for recovering heat	It is possible to improve thermal efficiency by utilizing the heat recovered from the "CIP return liquid" for heating the rinse water.



Specification

Ability	15m³/h, 20m³/h, 30m³/h
Supply pump	Sanitary pump
Heater	Shell & tube type heat exchanger

System example



SC-4 CIP controller

Features

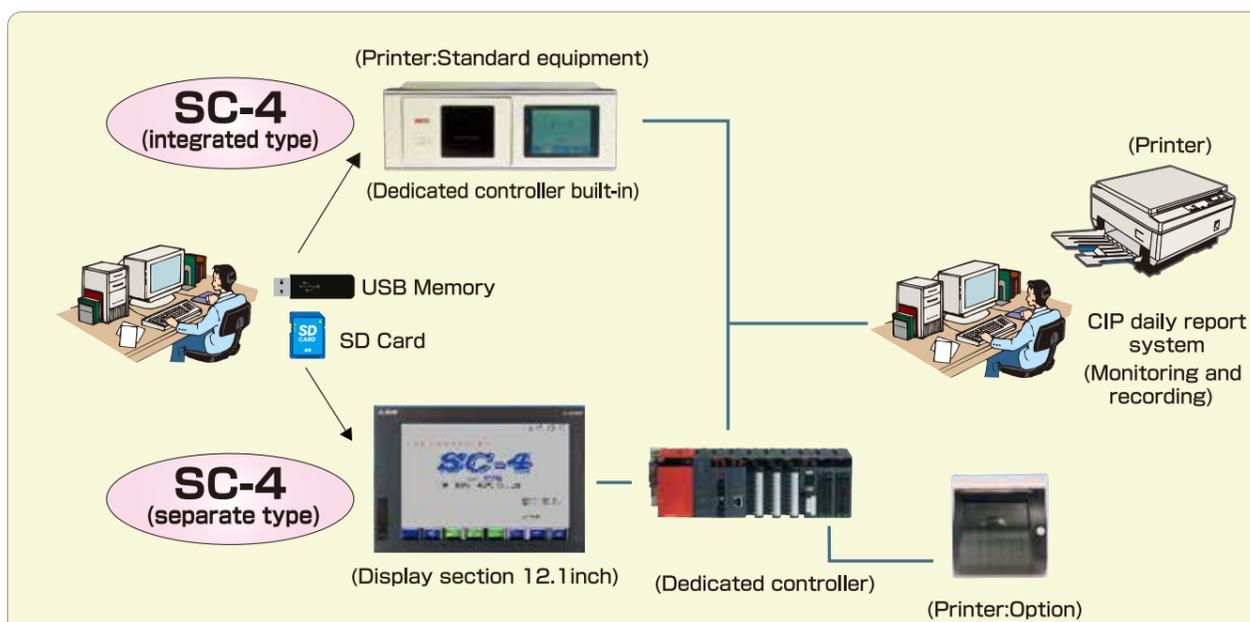
- It is possible to provide consolidated management of the CIP controller, such as the interlock of the equipment being cleaned and the equipment output.
- It is possible to monitor the operation, as well as to show the graphical representations of the temperature, concentration and flow rate on the "touch panel operation screen".
- It is possible to check on the "touch panel operation screen" the operation results that have been recorded on the SC-4 body.
- You can print out the operation results with the receipt printer. By using the specialized software of the daily report, it is possible to check more operation results, as well as to output the daily report.
- Water-saving control is also possible by adding options such as instrument sensors, etc.
- We have also prepared the integrated type, similar to conventional CIP controller.
- It is compatible for Multi-use CIP and Single-use CIP.



SC-4: separation type



System configuration



Specifications (1 series)

Power supply	AC100V 50/60Hz DC24V
Input and output	DI/64 points (DC24V), DO/64 points (DC24V open collector)
Regulation	AI/4-20mA input 8ch, AO/4-20mA output 4ch
Movements	PID2 loop
	Behavior pattern 8, timer pattern 6 (8 mode), route by 48

Washing number of routes	48 root per series
Communication	Ethernet, MelsecNET/10.H, CC-Link IE Control
Record	SD Card (separate-type), USB Memory (integrated-type), Receipt Printer
Print	Receipt printer
Monitoring control	Integrated-type:One series Separate-type:Up to three series

*DI: digital input AI: analog input DO: digital output AO: analog output

VD Sanitary valve

VD type diaphragm valve

We are introducing the "VD type diaphragm valve" which is the improved model of the VC type sanitary valve. It is a high-function valve that accommodates aseptic, having as its standard the split diaphragm and S-type diaphragm. It is possible to construct a "highly sanitary plant" by introducing this valve to all the steps in the process.

[Constructing a highly sanitary plant]

Pollution risk is reduced in the process before sterilization by the aseptic structure to shut off the outside air in the diaphragm. Due to its simple construction, the diaphragm can be washed with great ease. We can also anticipate the reduction in energy and utility usage during CIP time.

Time required for washing one valve (our ratio)

<Lip seal comparison: about 30% reduction>

<Metal bellows comparison: about 70% reduction>

The operational durability of the diaphragm (of PTFE material), being over five times greater than that of bellows (our ratio), can be used for a long time, making it possible to reduce maintenance needs, cost, as well the energy and time loss due to re-launching at the time of failure.



Reduction in the number of parts and weight reduction, attributed to the unitary construction of the air motor and the body joints. (Down conventional ratio 5-10%)



Specification (VD type Diaphragm Valve)

Bore	25, 38, 50, 64, 76, 100mm			
Joint	Clamp type (ISO standard-compliant) Sanitary flange type/welding type/other			
Wetted part material	SUS304, SUS316(SUS316L) Equivalent Diaphragm material: PTFE			
Stem packings material	EPDM, HNBR, FKM *1, PFA *2			
Permissible differential pressure	Reverse acting (single pressure) 0.5MPa (double pressure) 1.0MPa Direct acting (single pressure/double pressure) 0.5MPa			
Operating temperature limit	Common temperature 0~150°C			
Body Shape	All 13 types (same interplanar dimension as VC series)			
L	T	D	E	F
A	B	C	Tank valve	
			U	V
Special type				
P	Q	R	All maintenance parts, other than the air motor and body joints, share those of the VC series.	

*1 Fluoro-rubber *2 Fluorocarbon resin

H-type(Integrated-type)

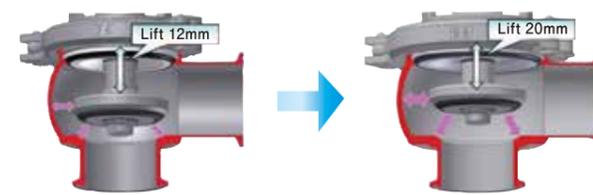
Reduction of the number of maintenance parts and improvement of the fragrance can be expected by adapting the integrated-type diaphragm shaft.



Bore	25, 38, 50, 64, 76mm
Body	L-type, T-type

Long-lift type

Long-lift type adopts division-type diaphragm and S-type with longer lift. It can be used to flow square solid particle up to 10mm.



	Linear sensor	Linear sensor
Line up	50mm	L-type, T-type
	64mm	Tank valve

Non-mix valve

Non-mix valve VW-F type



Features

- As all the wetted parts of the main diaphragm stem are in Teflon (PTFE), there is no contamination risk due to rubber deterioration.
- To prevent bacteria invasion, all the axes sliding portions have been cut off from the outside air by the diaphragm.
- Being highly water-repellent and having a simple shape, it can be washed with great ease.
- We minimized the liquid loss during working by minimizing the distance between the stem 1 and stem 2 by the use of "center diaphragm".
- By using the specialized auxiliary equipment during maintenance, it is possible to make the work safe and reliable, as well as to significantly reduce its load.
- The "tank direct type" has also been lined up, so it is possible to achieve a simple line configuration in accordance with pre-processing and post-processing.

Non-mix valve VW type



Features

- To prevent contamination by seal failure, an opening has been left between the upper and the lower seals.
- By using the manifold, etc., you can simplify the line configuration, making it possible to shorten the cleaning time and achieve efficiency.
- It is possible to check the seal condition from the outside.
- Adopting the side seal at the "bottom system packing" has reduced to a minimum the leak at the time of valve opening and closing.
- With an integrated-structure body, packing between the upper body and lower body is not required.
- Work can be easily performed at the time of maintenance by the sliding portion of consumables were aggregated at the bottom system.
- The consumables of the sliding portion are collected in the lower system, so it is easier to work when maintenance is being carried out.
- By making each of the calibers lightweight, (a 30% reduction, based on the ratio of this company), it has become significantly easier to handle the work.

Non-mix valve SS type



Features

- To prevent contamination by seal failure, an opening has been made between the upper and lower disk seals.
- It is possible to bring about such simplifications as not requiring "partially open cleaning" nor "cleaning between the valve seats".
- The valve body is a simple structure that is based on the VC series
- When the seal is faulty, discharge will be done from the two leakage outlets provided in the body to the outside.

Specification / Material

Item	VW-F type	VW type	SS type
Bore	50, 64mm	38, 50, 64, 76, 100mm	38, 50, 64, 76, 100mm
Joint	Clamp type (ISO standard-compliant), Welding type		
Permissible differential pressure	Top valve and lower valve : 0.7MPa Between the valve seat : 0.9MPa	Top valve and lower valve : 1.0MPa Between the valve seat : 0.3MPa	Single pressure : 0.5MPa Double pressure : 1.0MPa
Body pressure-resistance	1.0MPa		
Operating temperature limit	Common temperature 0~100°C (No freezing) (maximum operating temperature 135°C)		
Material	Body: SUS304/316 Equivalent Stem: PTFE	Body: SUS316 Equivalent Up and down the stem: SUS316 Equivalent Other: SUS304 Equivalent Stem packings: HNBR	Body: SUS316 Equivalent Up and down the stem: SUS316 Equivalent Other: SUS304 Equivalent Stem packings: EPDM Side valve piston packings: PFA
Cleaning methods	Portion Open cleaning		Cleaning between the valve seat + Portion under open cleaning
Side valve	Reverse actuation both pressure Permissible differential pressure 1.0MPa	—	Positive actuation single pressure Permissible differential pressure 1.0MPa



Sanitary pump

PB type Sanitary pump

The PB type sanitary pump uses the IEC standard IE3 (premium efficiency) class motor to realize energy saving of the plant facility and to improve the work environment.

Features

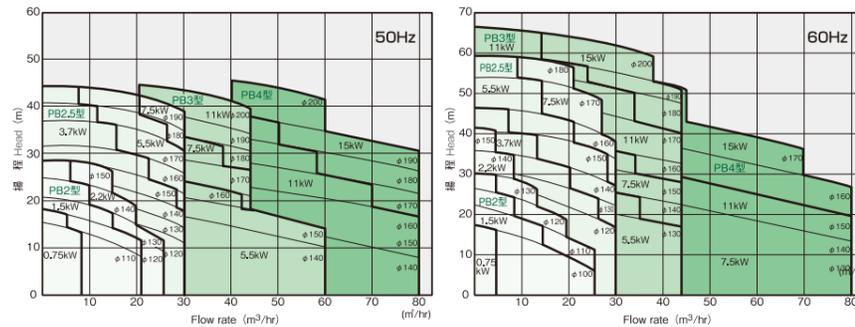
- It contributes to an improved work environment with low noise and heat quantity compared to before using an efficiency motor that saves energy by reducing electrical power usage.
- With a unique casing design, it excels in its capability for reverting from air entrainment, and is able to display the ability of the pump's main unit in a wide variety of environments.
- Special tools are not required for disassembly and inspection due to its simple structure.
- Supports a wide array of options including double mechanical seal or quenching, various options such as liquid contact part surface finish and drain specification.



Specification

Item	Specification
Classification	Centrifugal
Material	Wetted part: SUS316 Equivalent
	Casing gasket: EPDM(NBR) Other
	Mechanical seal: Carbon vs Ceramic, SIC vs SIC, NBR, EPDM, Other
Motor	Model: Totally-enclosed fan type
	Power supply: AC 3φ, 50Hz 200V, 60Hz 200/220V
	Pole number: 2

Selection Table



PSW type Self-priming sanitary pump

We are proposing a New-type self-priming sanitary pump «PSW» which exerts the superior performance and realizes energy-saving of plant equipment and improvement of working environment.

Features

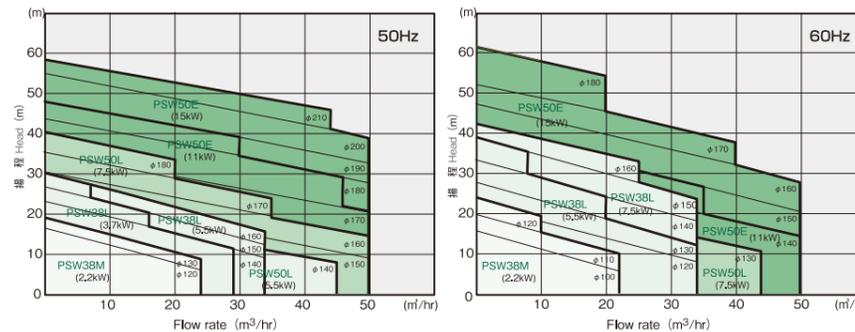
- Having a strong structure of air engulment it realizes efficient and energy saving operation with an excellent continuous liquid sending.
- It has a wide applicable range up to a large flow volume and a high lifting height. Accordingly, it contributes to streamlining of overall equipment such as deduction of the number of devices.
- It leads to an improvement of working environment by more than 10% deduction of noise compared to the conventional pump.



Specification

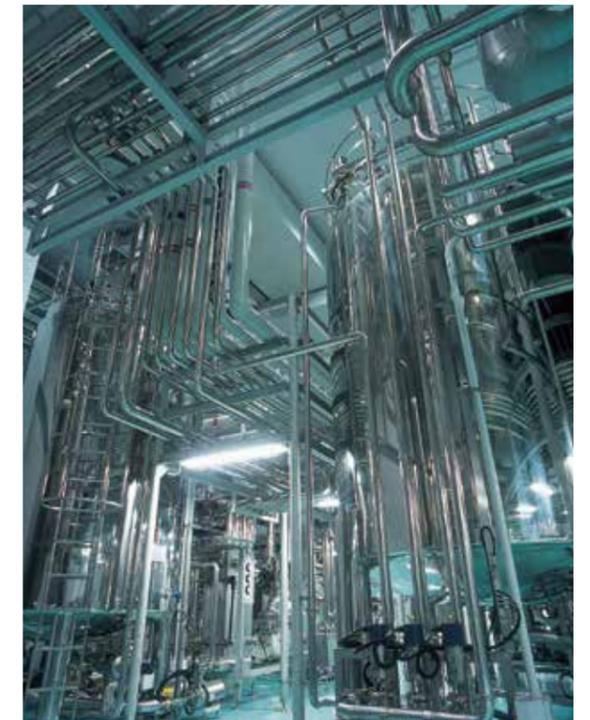
Item	Specification
Classification	Centrifugal
Material	Wetted part: SUS316 Equivalent
	Casing gasket: EPDM(NBR) Other
	Mechanical seal: SIC vs Ceramic, SIC vs SIC, Extra-hard vs Extra-hard, EPDM, Other
Motor	Model: Totally-enclosed fan type
	Power supply: AC 3φ, 50Hz 200V/380V/400V/415V, 60Hz 200V/220V/380V/400V/440V
	Pole number: 2

Selection Table



Sanitary tank

Sanitary tanks such as aseptic tanks that are critical to the production line of the dairy, beverage and food product plants for storage, dissolution and preparation, are designed based on the wealth of experience and actual results throughout all processes.



Safety tank accessory

We offer a resin sight glass, illumination window and water gauge, taking into consideration prevention of contamination by foreign substances and safety during maintenance.



Sight window



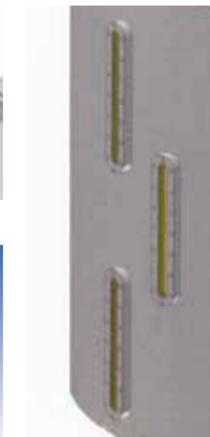
Illumination window



Clear grade (Sight window)



Natural grade (Illumination window)



Water level meter

Sanitary piping parts / Peripheral devices

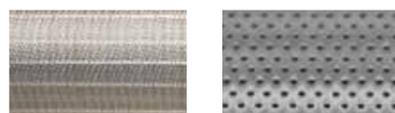


FL Filter • MFV Filter

Sanitary Line Filter



Sintered metallic net Wedge wire Punching metal

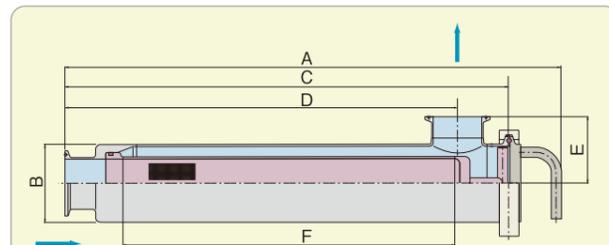


Notch wire Electron beam plate

Specification

Bore	50, 64, 76, 100mm
Fitting	Clamp type (ISO standard-compliant)
Body material	SUS304Equivalent SUS316Equivalent
Surface finish	Internal surface #400 (Cover is machine polishing Ra0.8) External surface # Polish
Packing material	EPDM, HNBR, Silicon, Fluoro rubber
Element material	SUS316Equivalent
Maximum usage pressure	1.0Mpa
Maximum usage temperature	140°C less
Element category	"Sintered metallic net Notch wire/Wedge wire/Punching metal/EBP (Electron beam plate) "

Outline drawing



Model	Fluid inlet/outlet (φ)	A	B (φ)	C	D	E	F	Filtration area	Weight (kg)	Standard flow rate (L/min)	Initial pressure drop	Internal capacity (L)
FL 50-SS	50	492	76.3	440	390	65	330	496	4.0	12	0.007	1.8
FL 64-SS	64	602	101.6	550	490	75	440	822	8.0	20	0.007	4.0
FL 76-SS	76	712	101.6	660	595	75	550	1249	9.0	30	0.007	4.9
FL 100-SS	100	807	139.8	755	670	95	645	1978	18.0	52	0.007	10.4

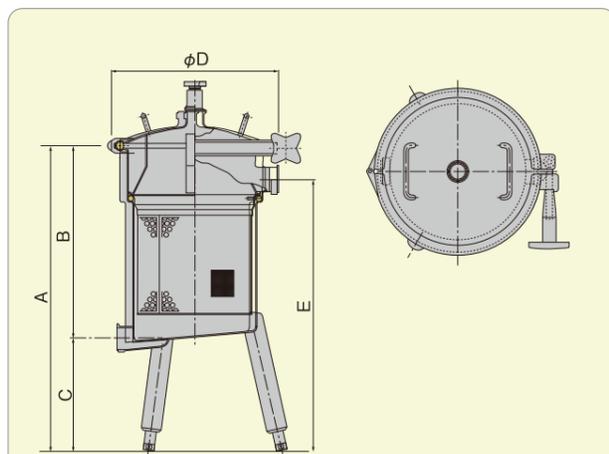
Basket Filter



Specification

Fitting	Clamp type (ISO standard-compliant)
Body material	SUS304Equivalent SUS316Equivalent
Surface finish	Internal surface #400 External surface #200 Polish
Packing material	EPDM (NBR)
Element material	Sintered metallic net : SUS304Equivalent, Metallic net type : SUS304Equivalent Cloth type : Nylon cloth
Maximum usage pressure	0.3Mpa
Maximum usage temperature	100°C less

Outline drawing



Model	A	B	C	φD	E	Filtration area (cm ²)			Weight (kg)			
						Sintered	Metallic net type	Cloth type	Sintered	Metallic net type	Cloth type	
MFV-16	755	505	250	376	605	1230	1500	770	20.0			
MFV-25	1100	600	500	416	1010	2635	3200	1641	25.0			
MFV-40	1135	635	500	490	1045	3250	4014	2080	53.0			

* Please confirm separately for small size pressure vessels and class-1 pressure vessels as their specifications differ from that of the above materials.

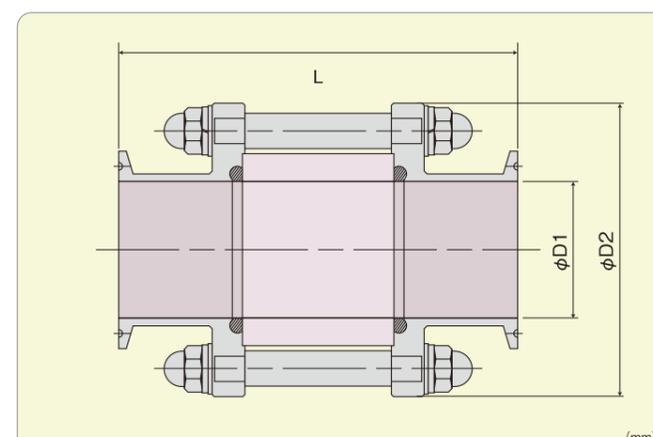


Polysight

Polysulfone sight glass

We offer a resin sight glass that excels in transparency, heat resistance and tenacity, aimed at improving pipeline safety and reliability. Easily replace the sight glass made of glass currently in use.

Outline drawing



Bore	D1	D2	L (*)
25	23	74	135
38	35.7	88	
50	47.8	99	
64	59.5	114	160
76	72.3	127	
100	97.6	155	

* A type with the same overall length (L=235mm) as the current glass type can be produced.



Specification

Fitting	Clamp type (ISO standard-compliant)
Bore	25,38,50,64,76,100mm
Wetted part material	SUS304 Equivalent SUS316 Equivalent
Maximum usage temperature	130°C (Maximum usage temperature of 100°C for regular use)
Pressure-resistance	1.0MPa

Plant instrumental control system

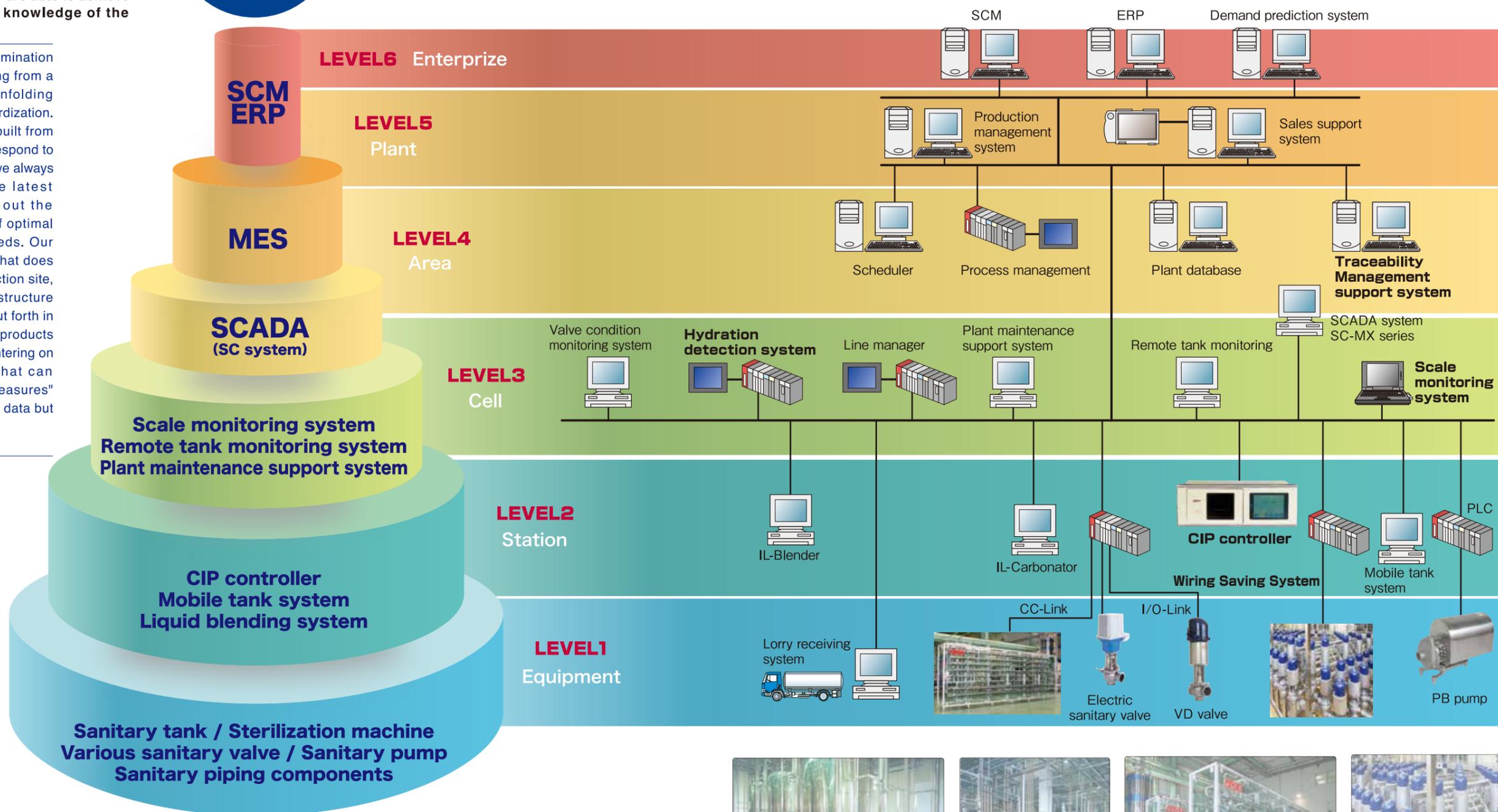
Utilizing our past reliable achievements and experience in plant hardware, IWAI's plant instrumental control system constructs your integrated information system optimized for the dairy, beverage and pharmaceutical plants, from the system to the hardware focusing on the entire plant to the production process. Our focus is on an optimized system that encompasses not only system construction but also total support, which we are able to achieve because of our thorough knowledge of the production site.

At IWAI, we support the dissemination of standardization and opening from a user's standpoint. We are unfolding activities toward global standardization. We offer an efficient system built from the foundation as we quickly respond to the flow of the times. Further, we always focus our attention on the latest technologies as we carry out the selection and construction of optimal systems that match user needs. Our aim is to construct a system that does not place a load on the production site, through the use of a system structure matching the level of efforts put forth in ensuring the quality of recent products in various support systems centering on monitoring systems, and that can respond by "support" and "measures" according to not just recorded data but also to decision making.



IWAI-FA Key points in the system structure

- We select a system that prioritizes the purpose of implementation and expectation effect.
- We construct a system that enables a user participation type long-term maintenance.
- From the individual plant equipment to the machines as well as dissimilar equipment systems, we value the plant configuration interface as the most important factor.
- System construction is conducted by taking affinity with PC systems or the user's existing system into consideration.
- When conducting operation training, we do not simply construct our system according to the manual.



Plant process
Beverage production technology/pharmaceutical production technology

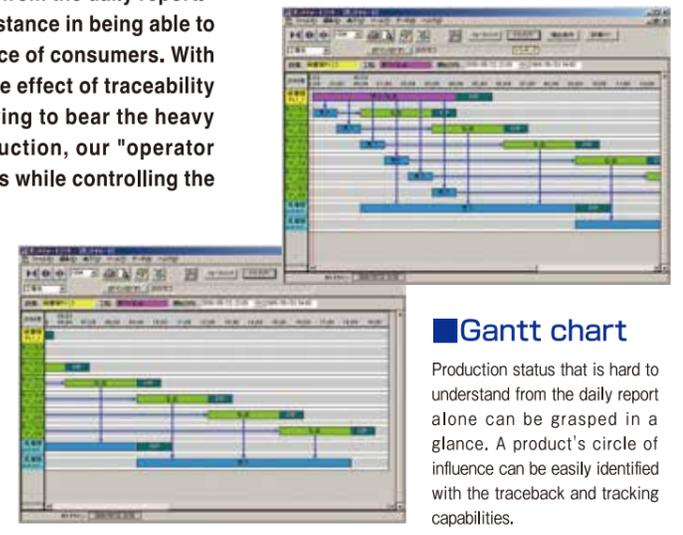
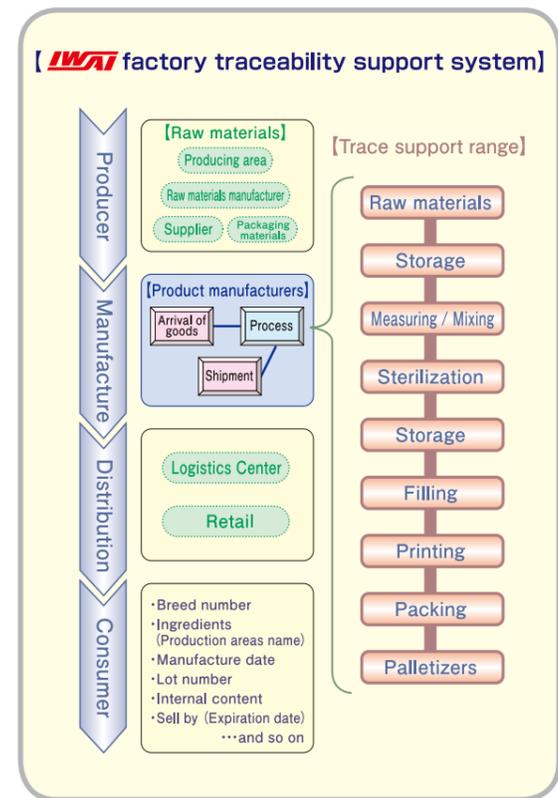


Plant instrumental control system

Traceability support system

LEVEL4 Area

IWAI's traceability support system is able to quickly and easily trace back and track the production process history with the information received from the daily report. In addition to confirmation of the process, we offer you assistance in being able to rapidly respond to inquiries to obtain the trust and confidence of consumers. With support for not only automation but also the manual line, the effect of traceability can be obtained when introducing the system without having to bear the heavy costs of automating the manual line. After system introduction, our "operator support system" offers support for keeping accurate records while controlling the burden of the operator task.



IWAI's "In-plant traceability support system" is valued as a plant facility that is safe and can be used with confidence, and also as a "product quality improvement support system" for manufactured products.

- ① Ingredient receiving management system
 - ② Weight and measurement management system
 - ③ Mixing operation management system
 - ④ Raw ingredient consumption/inventory management system
 - ⑤ HDT system that gathers field data
 - ⑥ Equipment maintenance and management support system
 - ⑦ On-site communication support system
 - Other various systems
- Operator support system**

Scale monitoring system

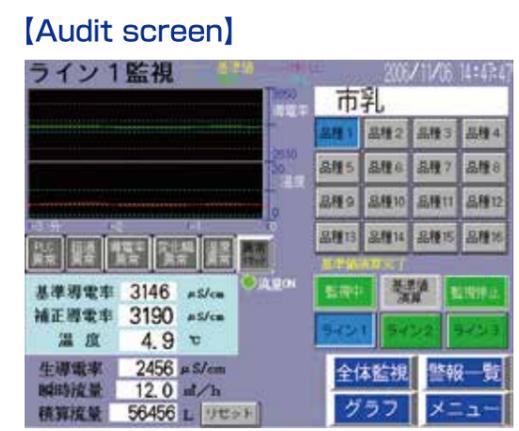
The scale monitoring system is a system that makes grasping the scale adhesion part easy, and can assist in gasping the optimum CIP start time and washability, through a real-time calculation of the overall heat transfer coefficient (U-value) from the temperature data of the sterilization machine.



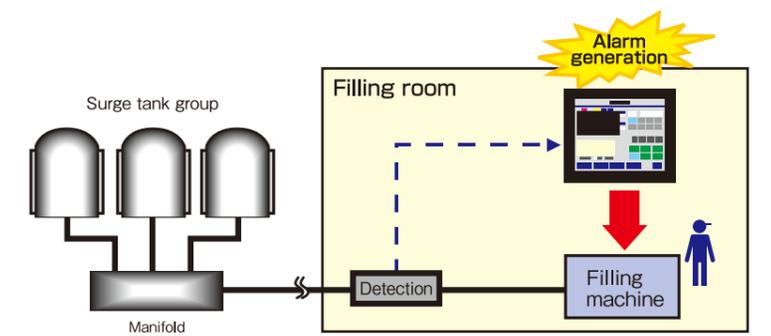
Hydration detection system

LEVEL3 Cell

Various efforts in safety and product management are being put forth to respond to rising demands in safety and reliability. As an effort towards PAT for guaranteeing product quality even during the production process, we have made a product with a system that can detect the contamination in a product by a different kind of substance during the filling process.

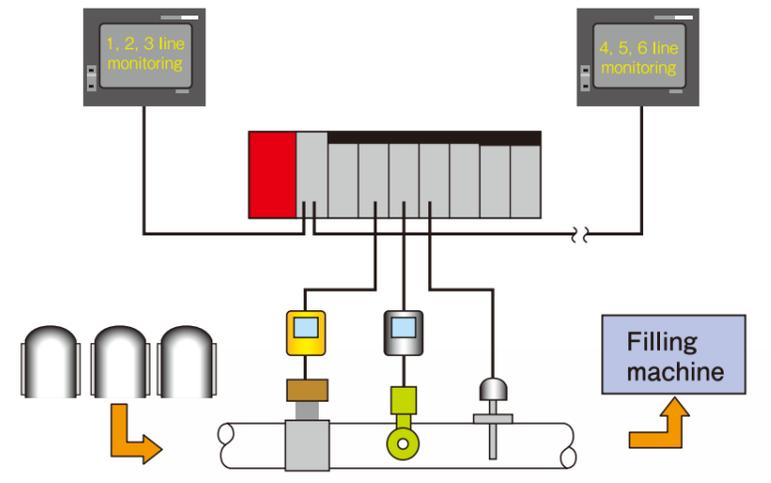


Number of monitoring filling line	6 line
Monitoring breed number	Per line up to 16 varieties
Hydrolysis detection capability	Hydrolytic 3% (wt%) or more (However, in the case of conductivity range) width 2000 $\mu S/cm$
Measurement error accuracy	Measurement value $\pm 0.5\%$
Conductivity measurement	Up to four switches the measurement range for each product
Conductivity temperature correction	The high-speed computing at PLC
Temperature-responsive	$\Delta T = 10^{\circ}C$, 2.5sec
Data recording	Conductivity three points, temperature, one month the flow rate data, 1,000 worth of alarm history, on the touch panel CF card each save.



- When hydration is detected, an alarm will be issued to alert the operator.
- According to the need, the replenishing can be stopped temporarily in order to verify if there are any problems regarding the product quality within the standard specification, enabling the replenishing of inferior goods to be prevented.

Specification / Equipment configuration



LEVEL3 Cell

Features

- By measuring the temperature at each point, the state transitions can be grasped easily with the U-value and fouling coefficient displayed real-time in a graph.
- Collected data can be managed and past data can be displayed as a graph.
- It supports use with multiple heat exchangers with up to eight patterns of parameters able to be registered and selected.
- It also comes equipped with a printing function, which allows necessary information on the screen to be printed out as is.

