

Hygienic
**Process
Engineering**

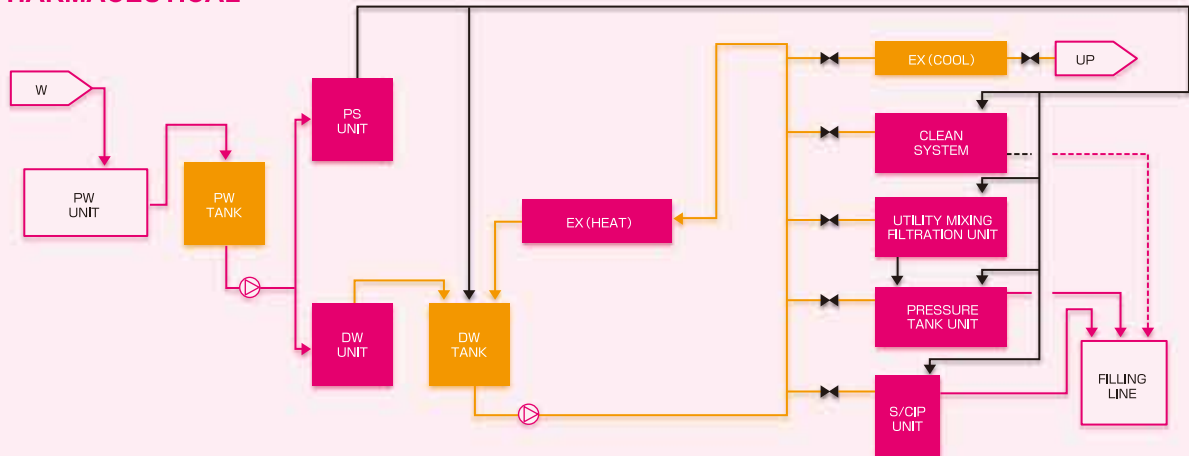
An engineering system established based on accumulated data and experience to cope with various needs

Creating products that meet customers' ever-changing needs

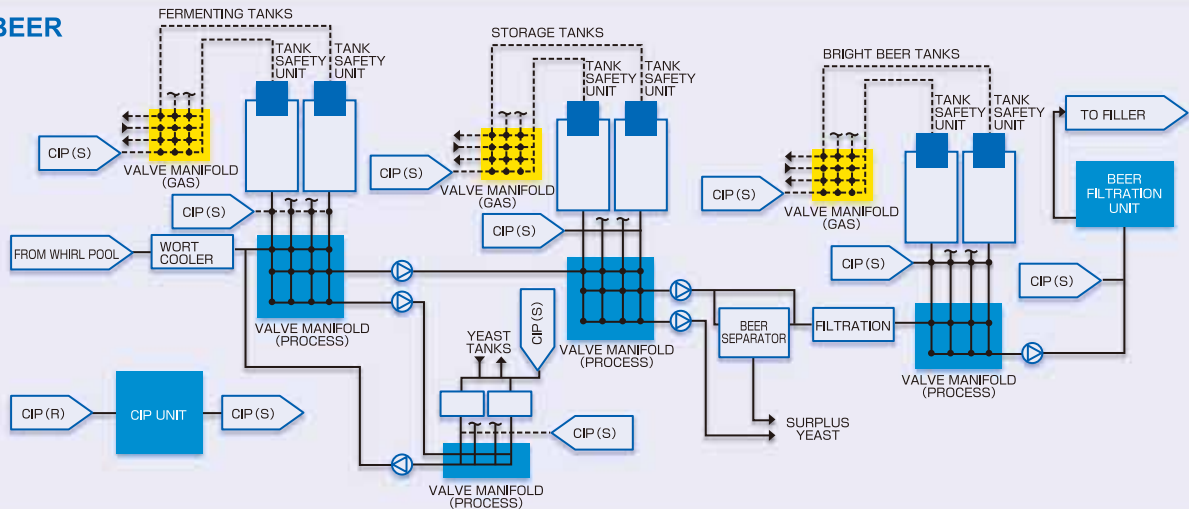
Our Process Engineering Dept. aims to be an "Only One" company with advanced engineering by offering a lineup of units suitable for distilling, food, beverage, cosmetics, and medicine and pharmaceuticals plants, etc.



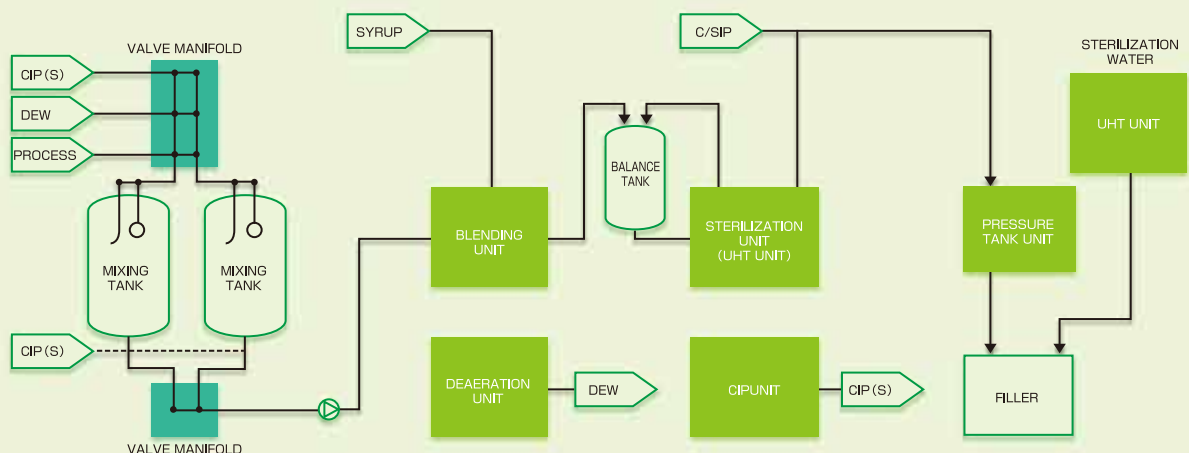
PHARMACEUTICAL



BEER



BEVERAGE



► Hygienic Mixing Unit



Preparing and mixing facilities

Application ● Product mixing, stirring, and filtering

- Features**
- C/SIP can be performed.
 - Reduced space through unitization
 - Compatible with in-line filter integrity testing
 - Process can be reduced through unitization and function/performance testing at plants
 - Design, construction, and validation packaged support

► Mixing unit



► Utility unit



► Filtration unit

► Hygienic Pressure Control Tank Unit



Pressure Control tank unit

Application ● Pre-filling storage requiring strict filling accuracy

- Features**
- Space-saving design
 - CIP/SIP can be performed.
 - Possible to perform filling under aseptic conditions.
 - Compatible with electropolitic specifications
 - Outside dimensions (50l storage tank): 1300 W x 750 D x 1800 H



► Hygienic Clean System



Rubber stopper cleaning and sterilizing dryer

Application

- Cleaning, sterilizing, and drying rubber stopper for vials and syringes

Features

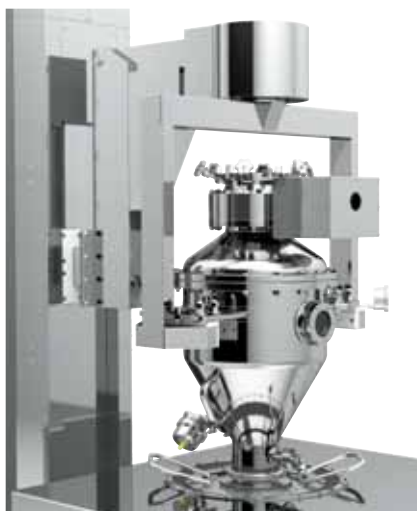
- Fully equipped with a series of supply systems including an aseptic transfer port and rubber stopper loading lifter.
- Achieves finished dryness of 0.3 to 0.5W% (drying time: 60 minutes). 0.1 W% or less also possible.
- Easy to validate sterilization and drying.
- Strong cleaning using a jet cleaning system

Type

- ~ 2.5kg (~ 5L)
- ~ 10kg (~ 20L)
- ~ 20kg (~ 40L)
- ~ 40kg (~ 80L)
- ~ 60kg (~ 120L)
- ~ 100kg (~ 200L)
- ~ 140kg (~ 280L)
- ~ 200kg (~ 400L)

Options

- Silicon treatment
- Process tank detachment/attachment system



Isolation system

Features

- Rubber stopper can be supplied to the isolator aseptically.
- Either of two docking methods (vertical and 45°) can be selected according to handling mode and installation space.
- Two types of aseptic transfer port handling are available as standard: inside handling type and outside handling type.
- As an option, this system can be corresponded to the system which the rubber stopper treatment tank (process tank) is removed and is connected to an isolator.

► Validation & maintenance



Validation and maintenance

Application

- Installation qualification (IQ)
- Operation qualification (OQ)
- Replacement of consumable parts such as valves, etc.
- Replacement of packings for pipes
- System maintenance

► Hygienic Tank



Hygienic tank

Application

- Hygienic stainless steel tanks for each process, utility, and CIP



Features

- Compatible with various finishes such as buffing, electropolitic, etc.
- Compatible with pressure vessels



Manufacturing capacity

- Diameter: Up to Ø3200 (within trailer transportable range)
- Weight: Up to 2.8t (Empty weight)
- Overall height: Up to 6000H

► Hygienic Design and Construction



Hygienic piping design and construction

Features

- Based on accumulated experience and results
- Worker-friendly design and construction through simulation of maintenance and operation
- Full support ensures that the project is carried out smoothly by participating from the planning stage



► Hygienic Shell and Tube Heat Exchanger



Hygienic double-tube sheet type heat exchanger

Application

- Heating/cooling of purified water, distilled water, process liquid, etc.



Features

- Double-tube sheet prevents contamination
- No liquid pooling
- Reduces loads applied to liquid-feed pump, etc. by minimizing pressure loss.
- Excellent cleaning
- SIP can be performed
- Compatible with electropolitic specifications
- Easy to maintain



► Hygienic design for valve manifold



Valve manifold design and manufacturing

Application

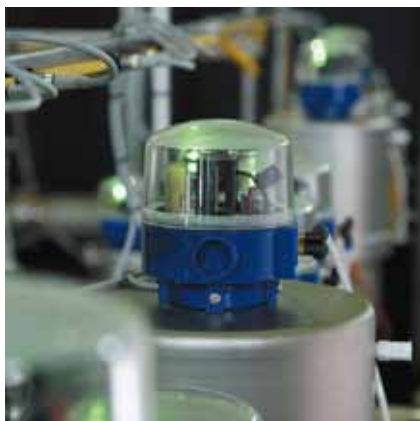
- Connection of valves for process liquid, gas, CIP



Features

- There is little liquid loss and excellent cleaning characteristics because the valve interval is minimized.
- Space-saving design
- On-site work can be reduced.
- Contributes to preventing contamination through assembly at plant.

► Hygienic Valve Control Head

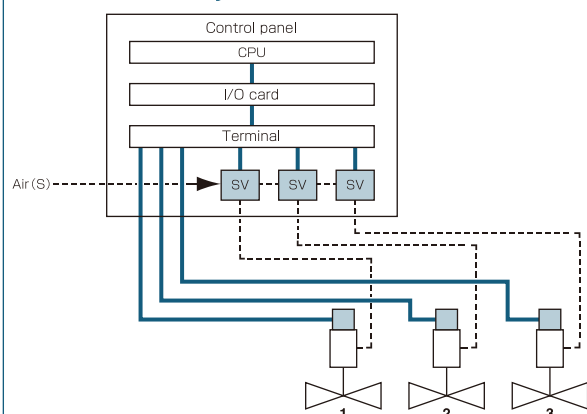


Valve control head

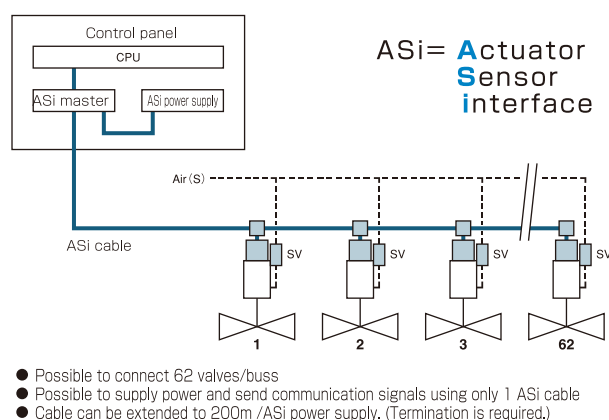
Features

- Spaces for solenoid valve panel/control panel can be reduced because the control head is equipped with a solenoid valve.
- Reduces construction costs by simplifying the wiring conduit construction.
- Possible to connect 62 units/buss by series wiring.
- Easy to maintain with simple instrumentation
- Cable can be extended to 200m/ASI power supply. (Termination is required.)

● Conventional system



● ASi system



► Hygienic CIP Unit



CIP unit

Application

- Supplies CIP liquid to the process tank and pipes.

Features

- Space-saving design
- User programming
- User-defined setting of values
- Easy to operate and monitor
- Double-tube sheet heat exchanger

Type

- 100ℓ/min S-1 ● 200ℓ/min S-2 ● 400ℓ/min S-3 ● 600ℓ/min S-4

Options

- Recorder
- Flow meter
- Operation record
- Linkage with other facilities
- Addition of dosing tank
- Recovery type

► Hygienic UHT Unit



UHT unit

Application

- Sterilizing and cooling of foods, pharmaceuticals, cosmetics, etc.

Features

- No contamination of product liquid by heating/cooling media (double-tube sheet (S&T) heat exchanger)
- Excellent cleaning characteristics
- Easy to maintain
- Wide applicable flow rate range

Options

- Linkage with other facilities
- Operation history
- Double-tube sheet heat exchanger

► Hygienic Tank Safety Equipment



Tank safety equipment

- Application**
- Protection of tank from positive and negative pressure
- Features**
- Tank cleaning function (rotary spray cleaner)
 - Equipped with built-in cleaning function
 - Material of liquid contact area: SUS304
 - Positive pressure side: Set to 0.02 to 0.19MPa
 - Negative pressure side: Set to -1.5kPa

► Hygienic Beer Filtration Unit



Beer filtration unit

- Application**
- Final filtering for draft beer
- Features**
- Space-saving design
 - Use of double-seal valve prevents contamination.
 - Automatic operation interlinking with upstream/downstream facilities and CIP facility
 - Compatible with filter integrity testing
 - Outside dimensions (8000l/hr.): 1850W x 1600D x 2400H
- Options**
- Integrity tester (made by filter manufacturer)
 - Special CIP unit

► Hygienic Washing Unit



Washing unit

- Application**
- Washing and removing foreign materials stuck on packing, gasket, etc.
- Features**
- Two types of cleaning methods: Large-size foreign material removal and metallic foreign material removal
 - Easy to operate because of being equipped with a touch panel.
 - Circulation of cleaning liquids reduces running cost.
 - Equipped with casters for easy relocation.
 - 95% or more of foreign material can be removed.
- Options**
- Sterilizing function
 - Drying function
 - Chemical washing

► Hygienic Flat Heat Exchanger



Flat-plate heat exchanger

- Application**
- Heating and cooling of viscous process liquids
- Features**
- The process-side flow channel area can be changed according to the viscosity of the process liquid
 - Easy to disassemble and clean
 - Prevents cross-contamination through employment of non-welded structure



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