

High precision cleaning system



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www.preci.co.jp

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Company overview

Trade name : PRECI Co., Ltd.
 Trademark :  PRECI
 Established : August 1, 2005
 Capital : 30,000,000 JPY
 President : Hayato Kato
 Products & services : **High precision cleaning technology**
 High precision cleaning system, Condenser, Dehydrator, Liquid regenerator, Vacuum dryer, Water purifier
Powder technology
 Spray dryer, Spray cooler
Biotechnology
 Shaker, Incubator shaker, Platelet shaker, High-pressure steam sterilizer
Test, Analytical measurement and Consignment processing
 Powder production process, High precision cleaning process
 Company motto : 以和為貴(Wa wo motte totooshi to nasu)
 This famous quote by seventh-century Japanese statesman Prince Shotoku means "Harmony is to be valued".
 Corporate philosophy : "Inspire and realize value that truly makes people happy, and bring it to reality. By doing so, we contribute to the development of society as a whole."
 Affiliated groups : Japan Industrial Conference on Cleaning (JICC)
 The Association of Powder Process Industry and Engineering, Japan (APPIE)
 Japan Scientific Instruments Association (JSIA)

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High precision cleaning system

PRECI is a leading manufacturer of a wide variety of precision cleaning systems that offer both advanced high precision cleaning technologies and environmentally friendly solutions. Our product lines include ultrasonic, spray, shower, jet, in-liquid jet, barrel, brush, de-aeration, and under-vacuum cleaning technologies. In addition to our standard lineup, we also offer customized solutions for more complex requirements.



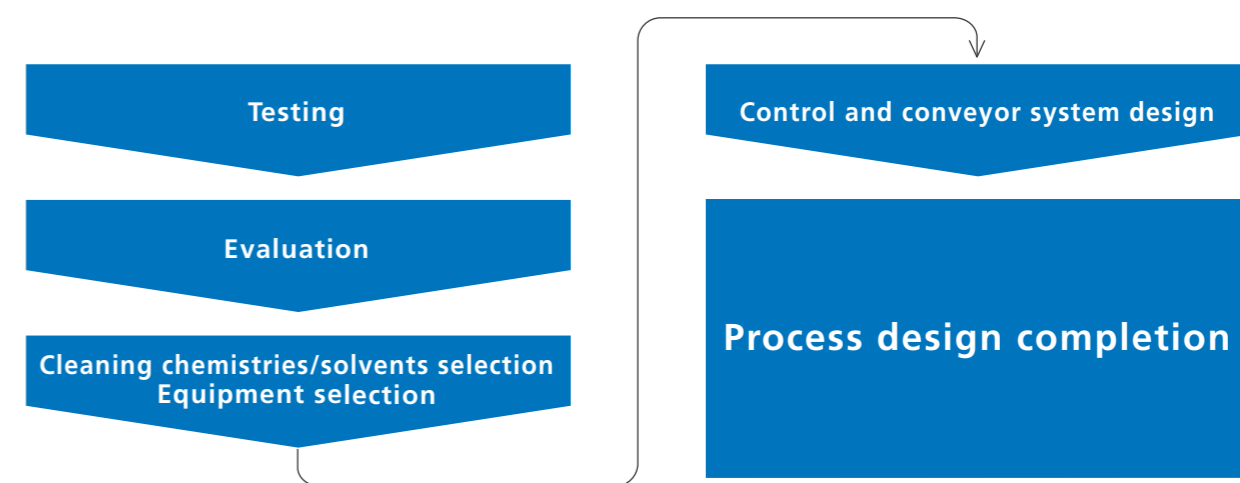
Process design

We offer advanced cleaning processes based on our testing and evaluations carried out at our test center. Our engineering specialists provide customized processes configured for automation. A variety of conveyor systems, such as wire mesh, chain, baskets, or hoops, are available to suit your needs, along with the choice of either manual or fully automatic control systems. In addition, we offer the minimum amount of automation required (semi-automatic), tailored to your budget. Furthermore, we cater for flexibility in various control designs for recipe settings as well as pre-/post- cleaning processes.

A variety of incidental equipment can be selected according to your process requirements; this includes de-liquoring, drying, vacuum drying, vapor drying, condensing, filtration, liquid distillation/regeneration, and water purification/regeneration. We provide systems that not only meet requirements for cleanliness but also reduce operating costs such as liquid and power consumption.



Process design flow



Cleaning chemistries and solvents

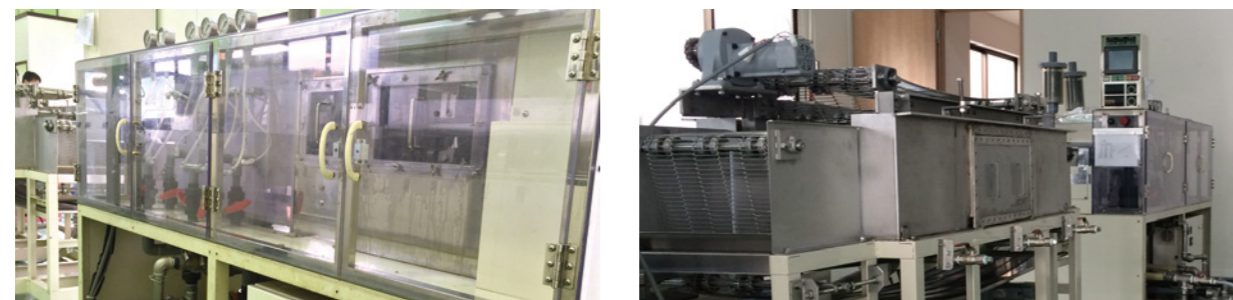
Our cleaning systems can cater to various types of cleaning chemistries and solvents, including aqueous and semi-aqueous chemistries, and solvents such as hydrocarbon, chlorinated, fluorinated, brominated and alcohol solvents. Instead of focusing on a specific chemistry/solvent, we select the best-suited option based on your cleaning requirements.

Applications

Water soluble flux, rosin flux, film substrate, PCB, FPC, surface mounting boards, bumped wafers, micro electronic parts, precision package products, image sensors, semiconductors, ceramic package devices, optical lenses, optical parts, liquid crystal glass, photo-masks, plastic lenses, doublets, prisms, spectacle lenses, polygon mirrors, resin-molded components, mobile phone parts, automobile parts, camera parts, precision metal parts, surgical parts, precision bearings, machined parts, plated parts, die-cast parts, precision pressed parts, light alloy die-cast parts, copier drums, deposited film removal, etc.

Testing and evaluations

We offer high-value testing and consultation services with great know-how. The Precision Cleaning Test Center (PCTC) is located in Saitama prefecture, Japan, with a wide range of cleaning systems and analytical equipment. Our highly experienced and qualified testing engineers offer services with advanced process evaluations by measuring and analyzing the characteristics of your application. Analyses and measurements are carried out during the testing process in real-time to achieve your specific requirements.



Available facilities

Pressure-reducing ultrasonic cleaning system **MEISTER α**

2-tank ultrasonic cleaning system with wire-mesh conveyor

Pressure-reducing ultrasonic cleaning system **MEISTER β**

Single tank ultrasonic cleaning system with wire-mesh conveyor

Co-solvent cleaning system

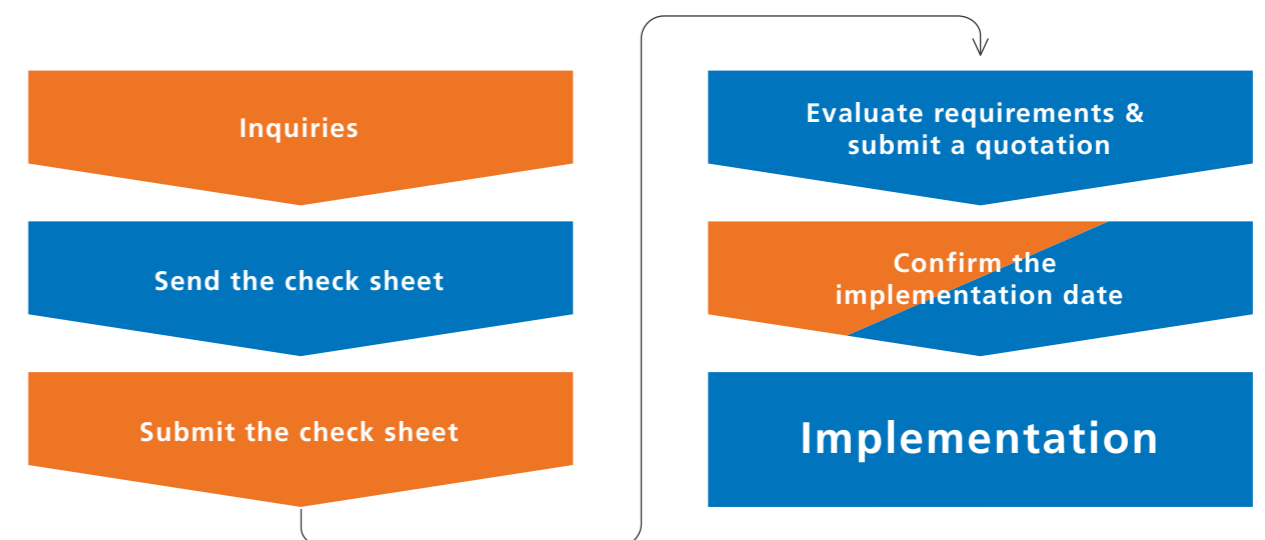
Pressure-reducing distillation /regeneration equipment

5-tank ultrasonic cleaning system

Suction drying equipment

How to apply

We accept inquiries by telephone and email, and via our website. When making an inquiry, we request you to fill out our 'Cleaning system testing check sheet' in order to help us understand your requirements. The check sheet can be downloaded from our website.



●...Carried out by customers. ●...Carried out by us.

Aqueous cleaning system

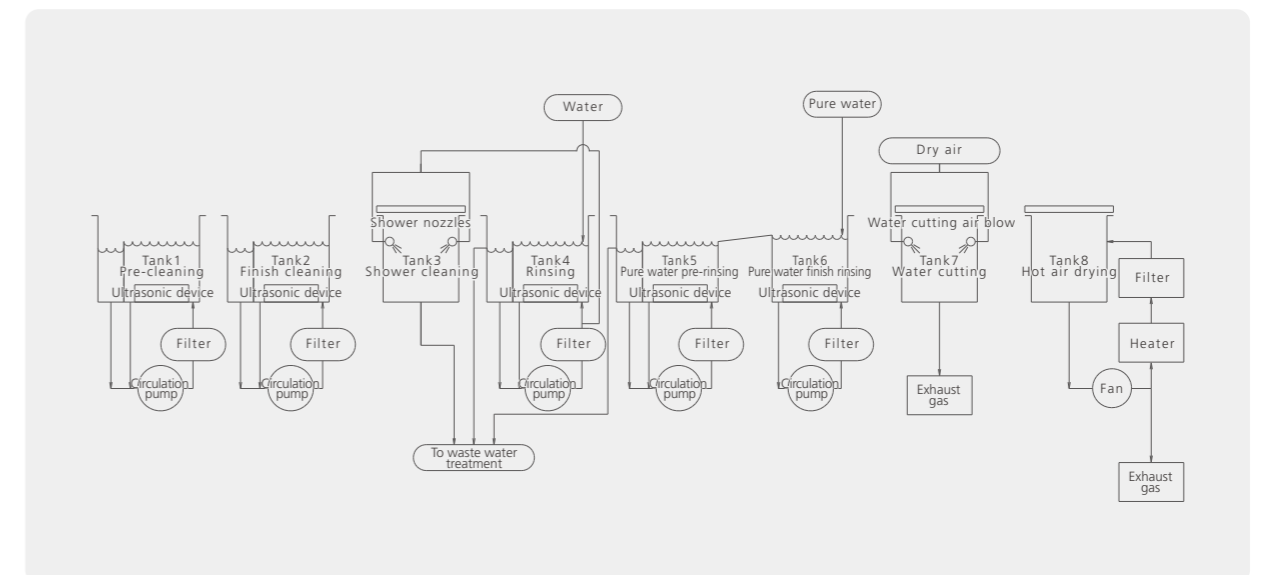
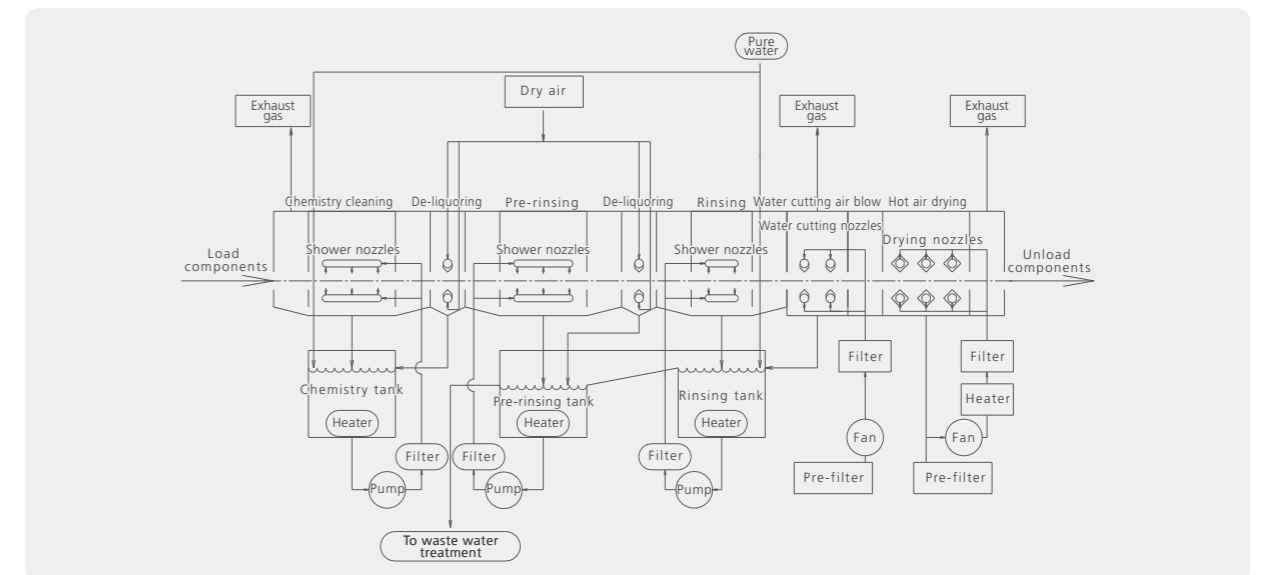
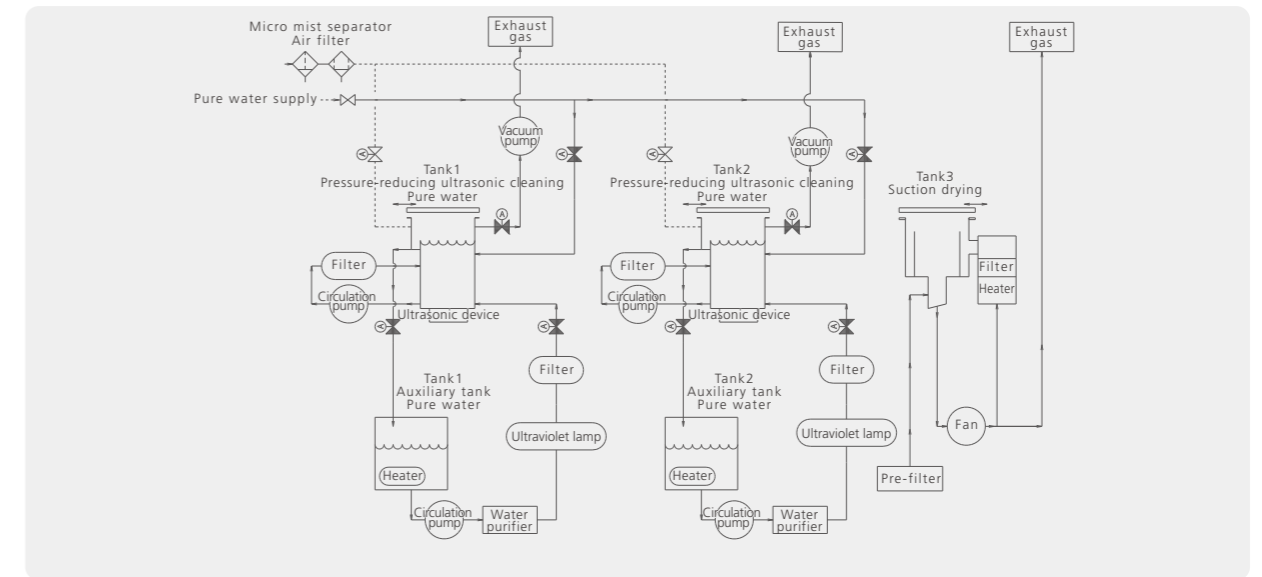


With our innovative technology for aqueous cleaning systems, we have provided advanced solutions in a wide range of requirements, including soluble flux removal, degreasing and fine particle removal. We offer state-of-the-art technologies with environmentally friendly solutions to the automotive, electronics, metal finishing, medical, semiconductor, optics and aerospace industries. Our product line ranges from automated spray, ultrasonic, pressure reducing ultrasonic, jet and immersion cleaning. Combinations of these technologies are also available. We are ready to provide any kinds of automation and conveyor systems for cellular and in-line cleaning processes.

System examples

 Full-automatic ultrasonic cleaning system for metal parts	 Full-automatic shower cleaning system (Vertical cassette conveyor system) for PCB	 Full-automatic shower and ultrasonic cleaning system for optical components	 Full-automatic pure water shower cleaning system for electronic components
 Full-automatic ultrasonic cleaning system for precision metal parts	 Full-automatic single-wafer cleaning system for liquid crystal glass	 Full-automatic ultrasonic cleaning system for molded plastic components	 Full-automatic pure water shower cleaning system for soluble flux
 Full-automatic pure water shower cleaning system for film substrates	 Full-automatic in-liquid jet and ultrasonic cleaning system for optical lenses	 Pure water pressure-reducing ultrasonic cleaning system for MEMS	 Full-automatic hot water shower cleaning system for die cast components

Process flow examples



Solvent cleaning system

Pressure-reducing ultrasonic cleaning system MEISTER

Full-automatic system with critical cleaning performance and less solvent consumption.



MEISTER α

For hydrocarbon or silicone solvents, etc. (explosion proof)

MEISTER β

Fluorinated, brominated, or chlorinated solvents, etc.

MEISTER Ω

Non-halogenated non-flammable solvent, etc. (explosion proof)

Pressure-reducing ultrasonic cleaning × Double immersion cleaning × Vapor cleaning

With our unique pressure-reducing ultrasonic cleaning technology, we not only achieve outstanding cleaning performance, but also a reduction of solvent consumption volume. The automatic process features our unique "double immersion cleaning" system - the first step with a rough cleaning, and the second with a finish cleaning. The solvent is replaced automatically at each step. The vapor cleaning/rinsing process, as the third step, allows for an exceptionally high level of cleanliness.

Double immersion cleaning × Vapor cleaning

In addition to low boiling point drying by reducing pressure levels, MEISTER achieves an unsurpassed drying performance by heating the cleaning tank itself. It is suited for components with deep holes, sintered components and parts with joints.

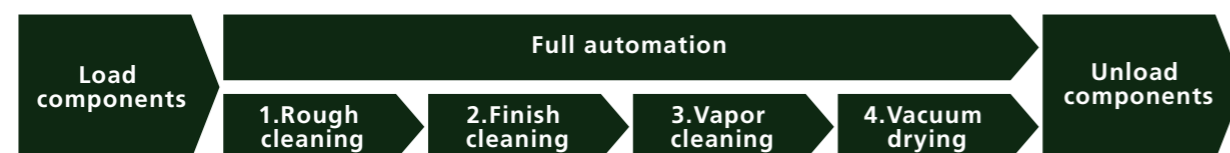
Rotating basket (Type B)

The rotating basket allows for further improvements in cleaning and drying performance by rotating the component in the cleaning process. It is ideal for materials with deep drawing parts and overlapping materials, such as thin pressed parts.

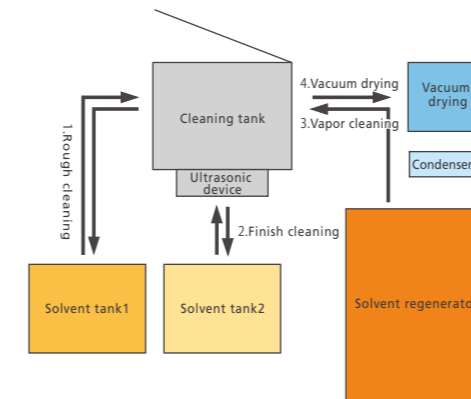
Comprehensive management through easy operation

The process is fully automated with excellent operability through the touch screen. The user-friendly interface allows you to control settings, create recipes, and manage operations with ease.

Cleaning process

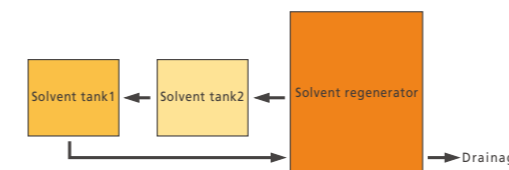


Basic system flow



Once the components are loaded into the tank, the entire process is operated automatically, including the replacement of the cleaning solvent. After rough and finish cleaning is completed, the components are rinsed by vapor. The components are then moved onto the vacuum drying process.

Solvent circulation system

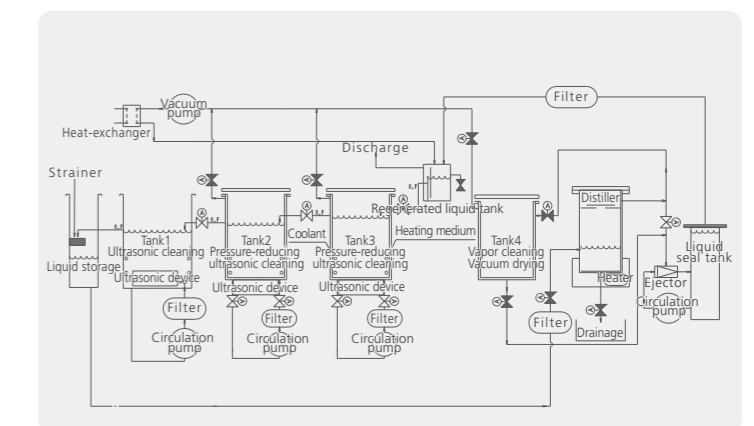
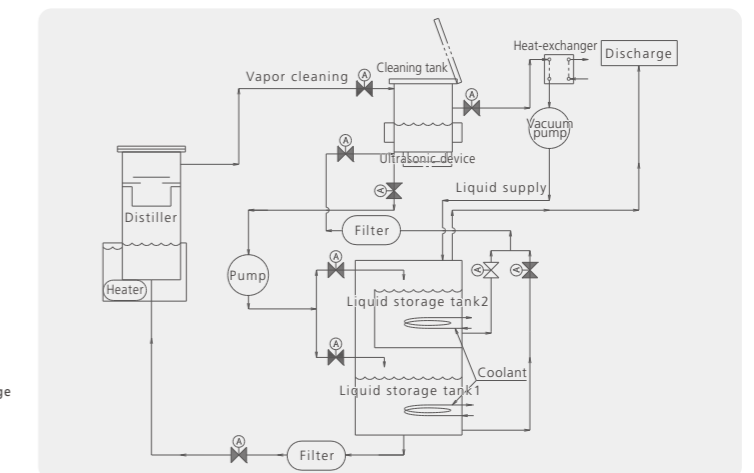
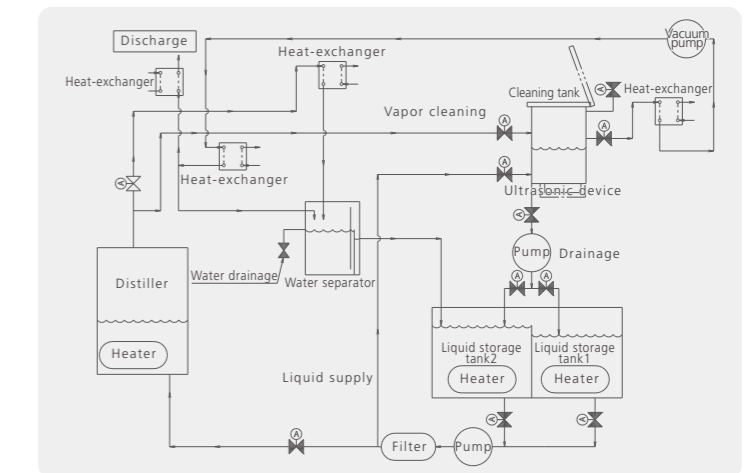


Contaminants are removed from inside the cleaning tank and are separated and dissolved. Then, they are sent to the liquid storage tank together with the used solvent. The contaminants inside the first liquid storage tank are sent to the distillation tank. The used solvent is distilled separately into waste contaminants and the solvent itself. The solvent regenerated in the distillation tank is supplied to the second liquid storage tank. The first liquid storage tank is supplied from the overflow of the second liquid storage tank. The concentrated contaminants in the distillation tank are regularly drained out.

Customized design

In addition to the basic system flow, we offer further customization designs tailored for your specific needs. We provide solutions that suit your requirements, including a wide selection of conveyor systems such as in-line automation systems, and advanced control systems. In addition, carry-in route, installation spaces, and other delivery-related requirements can also be flexibly designed.

Process flow examples



Co-solvent cleaning system

Powerful cleaning and faster drying

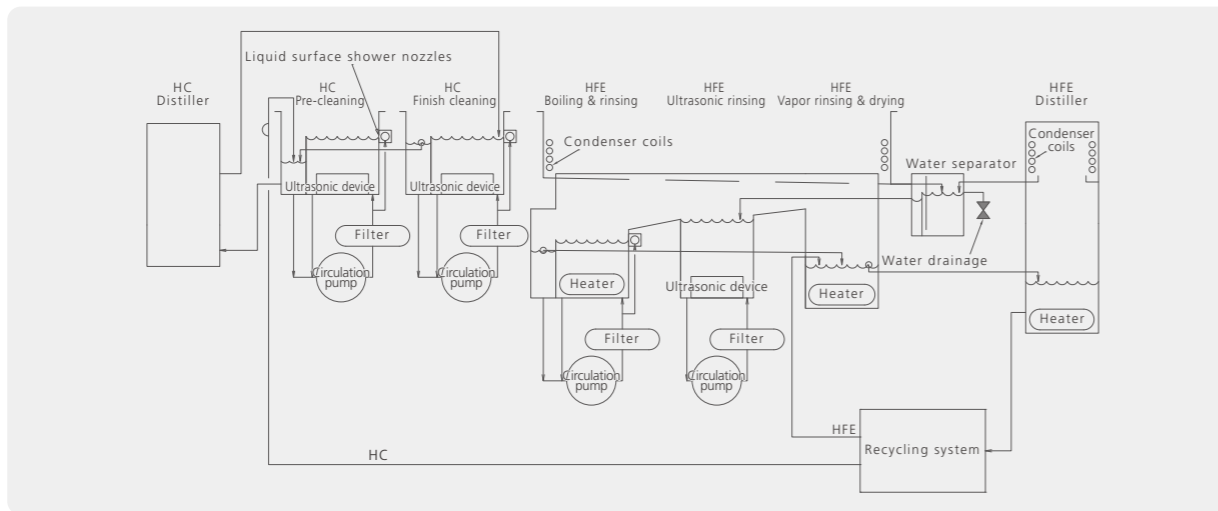
The co-solvent cleaning system uses a hydrocarbon solvent to clean and dissolve contaminants, followed by liquid substitution through a fluorinated solvent. Using two different solvents, the system delivers powerful cleaning, fast drying, and a perfect finish regardless of the type of contaminants.



Applicable fields

- For parts such as polygon mirrors which require high precision cleaning
- For parts which have both water-soluble and oil-based contaminants
- For precision metal parts which overlap with each other or have sac holes
- For electronic components which are sensitive to high temperatures

Process flow



Advantages

Hydrocarbon solvents	<ul style="list-style-type: none"> • Superior cleaning performance compared to aqueous cleaning chemistries • Strong cleaning performance for oil-based contaminants • Solvent recycling is possible through distillation-regeneration process
Fluorinated solvents	<ul style="list-style-type: none"> • Has good permeability, enabling removal of contaminants in cracks • Substitution for the hydrocarbon solvent is smooth • Superior drying performance with low latent heat of vaporization
Co-solvent cleaning system	<ul style="list-style-type: none"> • Delivers excellent cleaning performance by hydrocarbon solvents • Enables faster drying with minimized heat damage by fluorinated solvents

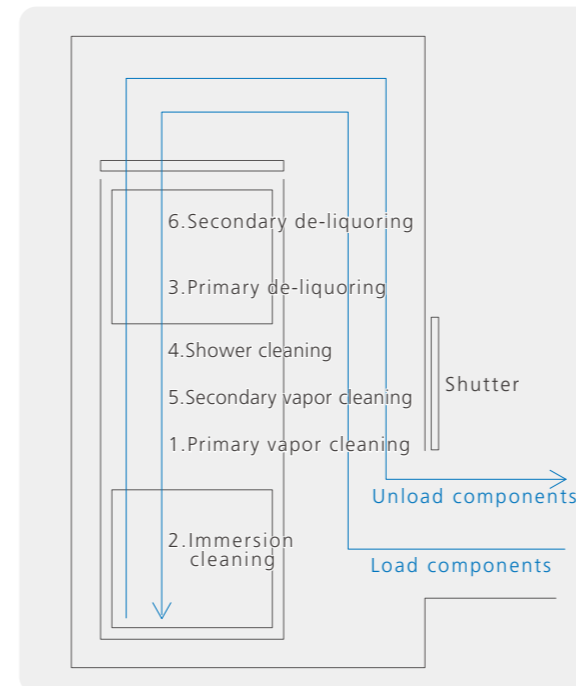
Full-automatic vertical ultrasonic cleaning system

Best standard full-automatic cleaning system in organic solvents



The full-automatic vertical cleaning system offers a high performance automatic cleaning process for various organic solvents. The system delivers strong cleaning performance by combining the rotating basket with superheat technology. The process matches various processed parts such as blind-hole and lightweight pressed thin parts that are not suited for a single-pass cleaning process. The system achieves maximum cleaning performance through the use of methylene chloride or brominated solvent "ABSOL" for de-greasing metal parts, and HFE for cleaning and removing contaminants from resin components.

System flow

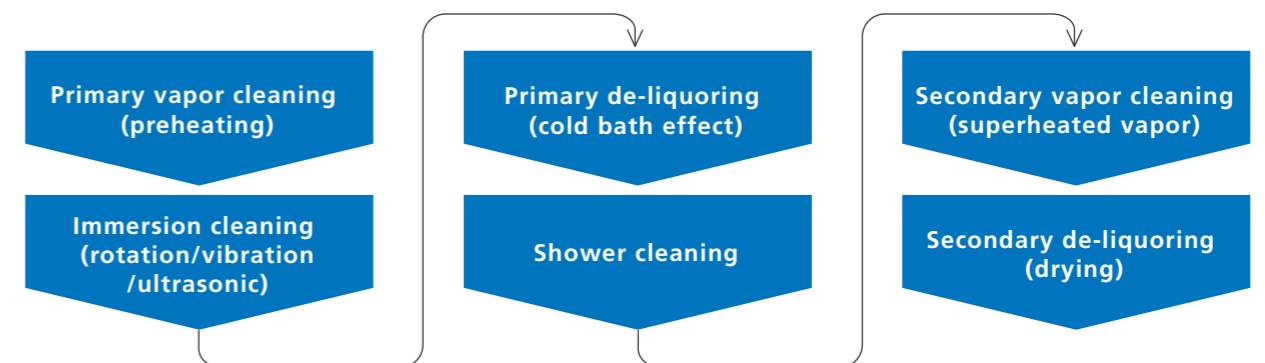


Features

- Cleanliness** : The synergistic effect of the superheated vapor and rotating basket achieve a cleaning performance equal or superior to trichloroethylene
- Superheat technology** : Spots and condensation are fully removed by heating the parts with superheated vapor
- Rotating basket** : Effective against sealed lightweight materials and blind holes
- Capacity** : Daily standard processing capacity of 100 or more baskets
- Working property** : Easy operating height of the loading port (690mm)

※Shutters open/close and loading/unloading baskets are manual operations.

Cleaning process



Double-tank fluorinated solvent cleaning system

Double-tank fluorinated solvent cleaning system offers strong particle removal performance using fluorinated solvents. The system achieves powerful cleaning and drying properties over two processes: Ultrasonic immersion cleaning in tank 1 and vapor cleaning in tank 2. We also offer scaled-up options for large-scale processes.

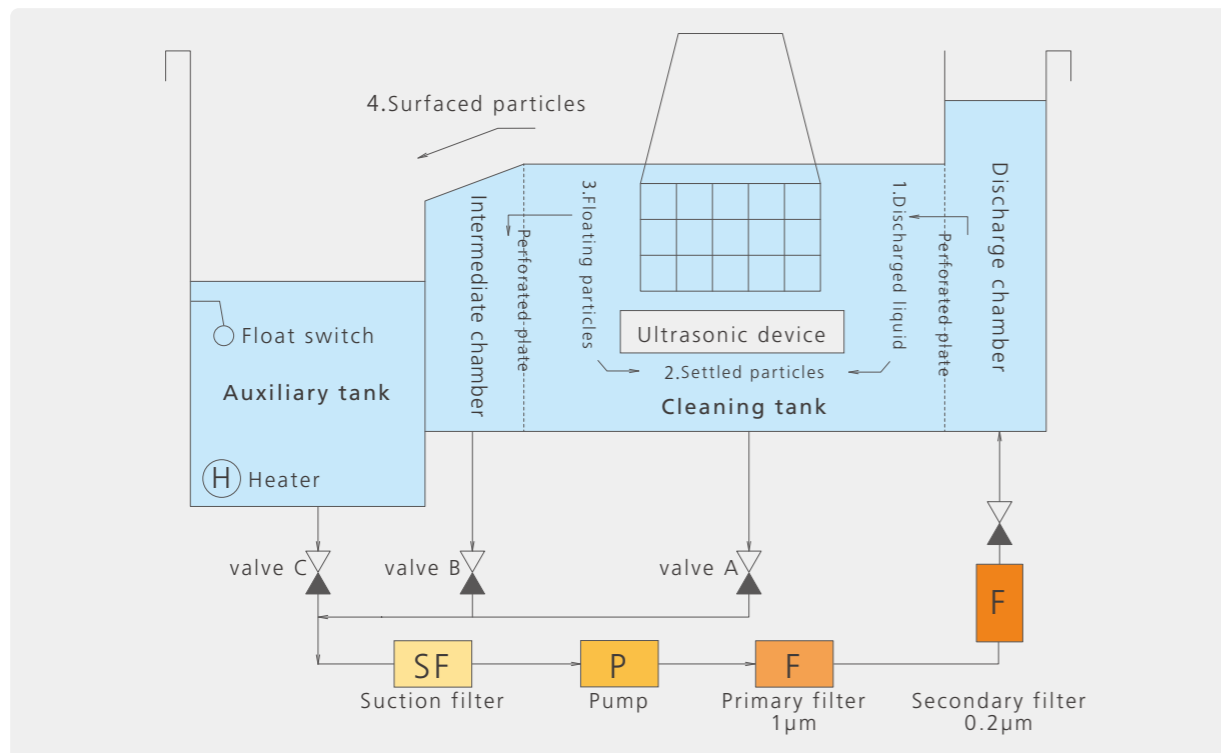


Specifications

Jig dimensions	: 150W×150D×100H(mm)
Ultrasonic device	: 200W/40kHz
External dimensions	: 1000W×600D×900H(mm)
Heater (tank 1)	: 700W
Heater (tank 2)	: 700W
Power supply	: 3 phase 200V/220V
	: Coolant utility 10L/min
Solvent volume	: 17L

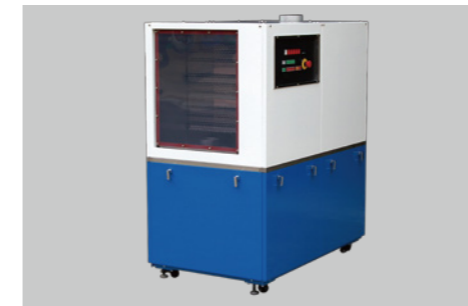
Filtration system for cleaning tanks employing a perforated plate

The perforated plates are fitted to the cleaning tank, and the level of cleanliness inside the tank is improved by discharging or collecting the cleaning solvent. Cleaning solvent that passes through the suction filter is pumped through filters and sent from the discharge chamber to the inside of the tank (1). Settled particles are expelled from the bottom of the tank (2), and floating particles are expelled from the perforated plate to the intermediate chamber (3). Surfaced particles are expelled from the auxiliary tank through overflow (4). This enables efficient purification that is not influenced by the relative gravity of the particles or solvent flow. The expulsion balance for (1) to (4) is adjustable by valve A, B and C.

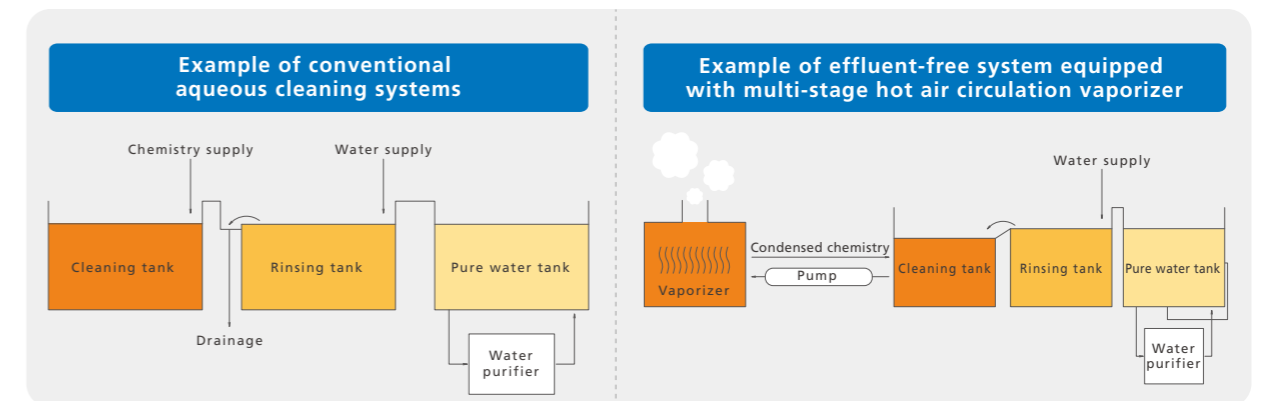


Incidental equipment

Multi-stage hot air circulation vaporizer



The multi-stage hot air circulation vaporizer is attached or built-in to the cleaning system. Drainage from the cleaning system can be greatly reduced through vaporizing and condensing. If aqueous systems are equipped with one of these, the cleaning chemistry can be recycled when it is moved on to the next tank, meaning a reduction of chemistry filling. Rinsing performance is improved because water can be supplied to the rinsing tank continuously.



Vacuum & hot air dual drying system

The vacuum & hot air dual drying system is a hybrid drying system that is equipped with both vacuum drying and hot air drying functions. The vacuum dryer compensates for problematic situations of hot air dryer, such as poor drying of sac holes, while the hot air dryer helps heighten the heat of products. Automatic alternate operation between hot air dryer and vacuum dryer achieves an excellent drying performance. The alternate operation cycle length can be set to suit the requirement. The hot air circulation process has an internal HEPA filter, and can remove particles.



Specifications

External dimensions	: 1400W×950D×1000H(mm)
Internal dimensions of drying chamber	: 410W×410D×420H(mm)
Power of vacuum pump	: 1.1kW
Power of electric heater	: 10kW
Power of fan	: 0.4kW
Power of chamber insulation heater	: 0.7kW×2
Ultimate vacuum pressure	: 102Pa
Power supply	: 3 phase 200V/220V
Compressed air utility	: 0.4MPa or more

Suction dryer

The suction dryer is a dryer that dehydrates and dries the product after an aqueous cleaning process while still in the cleaning basket. The moisture is drawn off by a jet air current from the lower part of the drying chamber, enabling powerful dehydration. Hot air is supplied from the upper part of the drying chamber. As well as the standard square basket, a rotating barrel can also be used.



Specifications

- External dimensions : 1000W×1325D×1000H(mm)
- Compatible basket : 250W×350D×200(+handle130) dimensions H(mm)
- Compatible rotating : Opposite side 160×250L(mm) barrel dimensions
- Power of high-pressure : 1.5kW/2.2kW(Selectable) fan
- Power of electric : 10kW heater

Hydrocarbon solvent distillation & regeneration system



The hydrocarbon solvent distillation and regeneration system allows for a highly efficient hydrocarbon solvent recycling process with pressure reducing technology that enables safe operations of flammable solvents. The system is compact in size and can be equipped with existing cleaning processes, without the concern for finding space.

Specifications

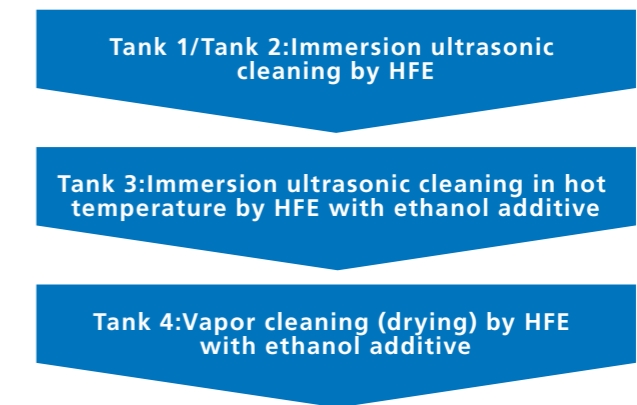
- External dimensions : 800W×700D×1400H(mm)
- Distillation capacity : Max. 20L/h
- Cleaning solvents : Hydrocarbon solvents
- Power supply : 3 phase 200V/220V

Four-tank fluorinated solvent de-liquoring & drying system

The four-tank fluorinated solvent de-liquoring and drying system is ideal for replacement of an IPA substitution and drying process. Our system offers simplified fluid control and improved finishing cleanliness through the use of two types of fluorinated solvents. This system reduces heat damage to products by drying at a low boiling point. Additionally, the system prevents spots through an initial removal of moisture. HFC and HFE are also available.



System flow



Notes
