

with hopeful technology

**HISAKA**

High-Temperature, High-Pressure Cooking System  
for Deliciousness and Safety

# Retort Cooking Sterilizer

Contact

 **HISAKA WORKS, LTD. PROCESS ENGINEERING DIV.**

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English

<https://www.hisaka.co.jp/food/>

HISAKA WORKS, LTD., Process Engineering Division is both ISO9001 and ISO14001 certified.  
HISAKA WORKS, LTD., Ikoma Plant is ISO45001 certified.

FO-CE000900  
24.5.500 ITP





# Ease, Deliciousness, and Safety in Food Practices Worldwide.

Since launching the manufacture of retort sterilizers in 1975, HISAKA has been a customer favorite both in Japan and overseas. HISAKA provides state-of-the-art technology for a broad range of applications.



Ikoma Plant (Ikoma City, Nara Prefecture)

## Overseas Delivery record

\*As of April 2022 (including testing machines)

Food industry | **3,000 units**

Pharmaceutical industry | **220 units**

## Overseas Delivery record

**200 units**

Example destinations

- United States
- China
- South Korea
- Taiwan
- Thailand
- Indonesia
- UAE
- Mexico
- Morocco Etc.

Certifications

- ISO14001
- ISO45001
- ISO9001
- ASME
- Manufacture License of Special Equipment People's Republic of China
- Class I Pressure Vessel Manufacture

## Retort sterilizers

\*Selection will vary according to requirements.

### Hot water spray type



Advanced temperature/pressure control in processing tank

Capable of sterilizing various product types

Controls secondary contamination

Reduces environmental burden by saving water

### Hot water storage type



High-temperature, rapid processing

Saves energy via heat recovery

Rotating type also available (option)

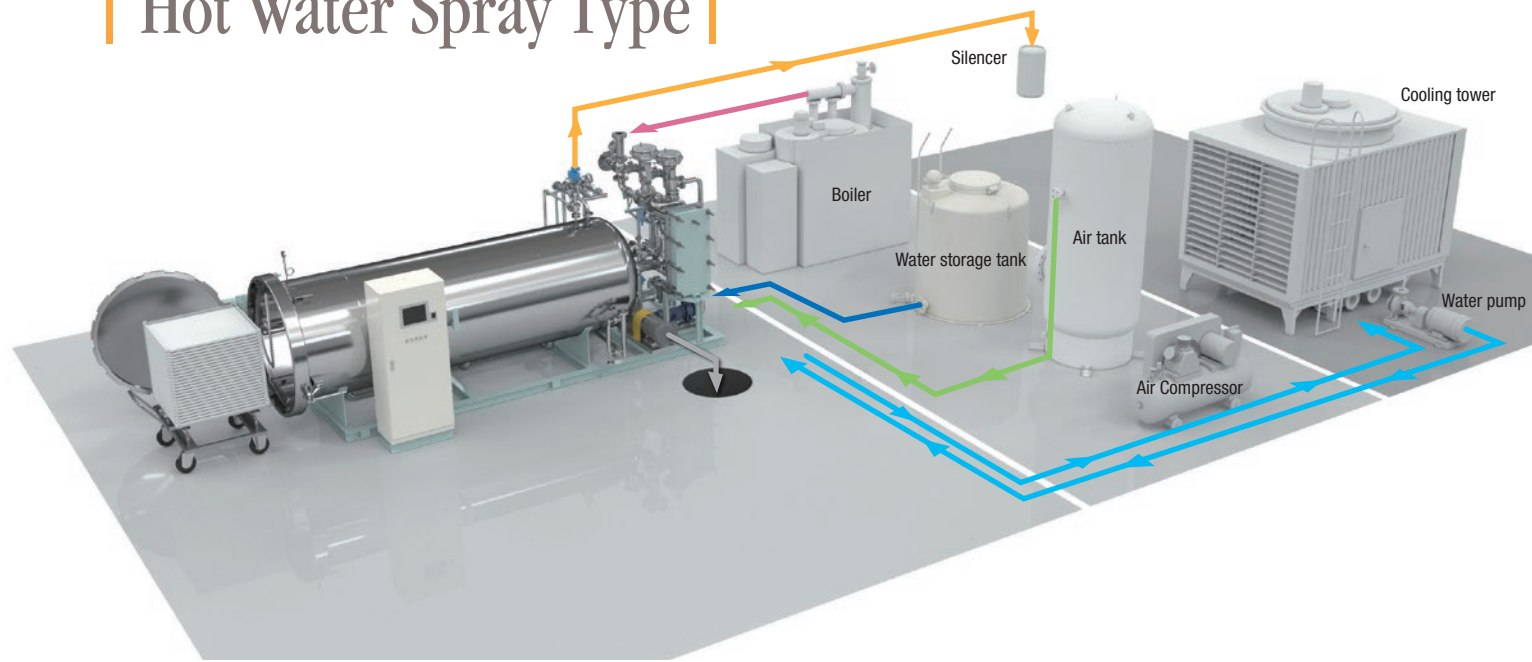
Full-water heating/cooling

## Retort food examples





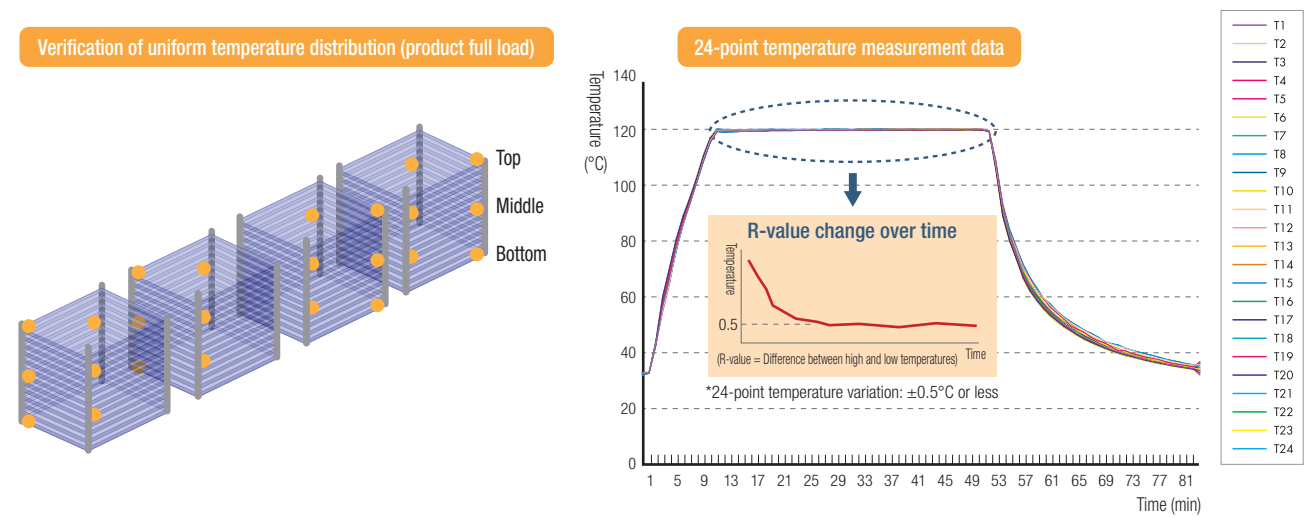
# Hot Water Spray Type



## Advanced Temperature/Pressure Control in Processing Tank

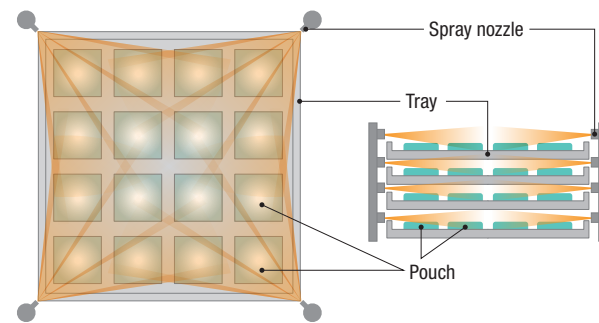
### Eliminates temperature variation in processing tank!

Using a control valve to adjust the heating and cooling temperatures, it prevents attained-temperature overshoot and nonuniformity. When the temperature was measured at the 24 points (●) shown in the figure below, temperature uniformity during heating and cooling was confirmed. Nonuniformity of heat transfer to the product is minimal, which improves sterilization safety.

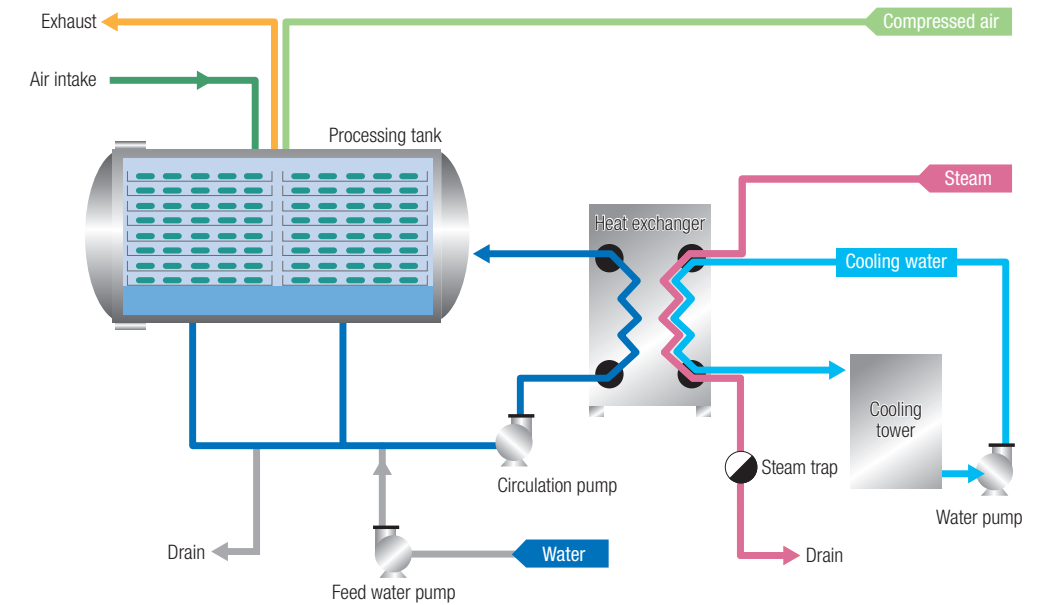


### Design-conscious spray nozzle

Hot water is sprayed horizontally to each level of the stacked trays from four directions. The sprayed hot water agitates the vapor in the processing tank and transmits heat uniformly to the product. Similarly, when cooling, cooling water is sprayed on the product, enabling uniform product cooling. This eliminates product overheating and insufficient cooling, and preserves quality and deliciousness.



### Flow sheet



### Controls secondary contamination

Circulating water in the processing tank has been heat-sterilized by the plate heat exchanger and is used as cooling water. Thus, there is no secondary contamination, and chlorine and other pretreatment of the cooling water is not required. Also, there is no need to worry about contamination from heated steam.

### Reduces environmental burden by saving water

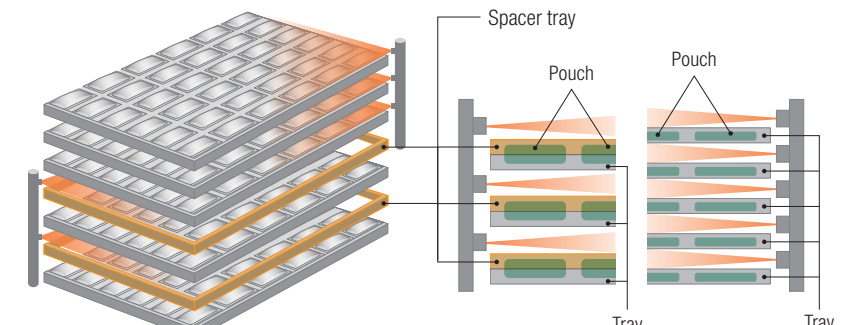
Since a plate heat exchanger is standardly equipped and a cooling tower can be used, you can save water. With large equipment, you can save even more energy and water by adopting a hot water recovery system (option).

### Capable of sterilizing various product types

Capable of sterilizing various product types by adding options.



Double nozzle specs (option)

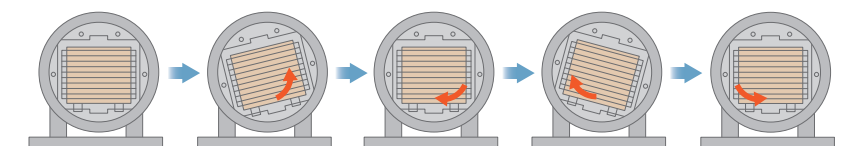


Spacer tray (option)  
Supports processing of products of various size.

Can even support large pouch products that are higher than one tray.

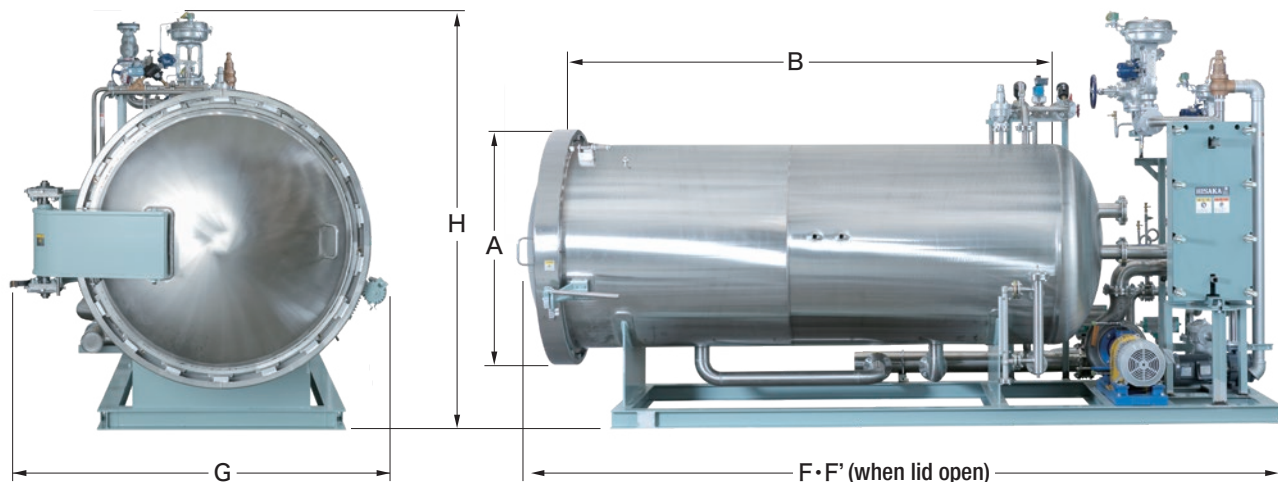


Rolling type (option)



Rolling the interior of the processing tank agitates food inside large-capacity pouches and reduces heating/cooling time. It can also suppress partial quality deterioration of high-protein products. Example: liquid food

# Hot Water Spray Type (Stationary Type) - Specifications



## Processing capacity (pouches) Equivalent size of pouch: 130 x 170 x 20 mm

Type	Item	Actual dimensions/basket (mm)	Stacked layers/basket	Pouch capacity/tray	Pouch capacity/basket
RCS-60		350×940×350	11	14	154
RCS-100		550×940×700	23	21	483
RCS-120		750×940×800	26	28	728
RCS-130		850×940×860	28	35	980

## RCS-130/40SPXG

Tank diameter, cm  
 Tray carts x10  
 SP: Spray type  
 X: Heat exchanger  
 G: Air-containing container processing system

## Dimensions (mm)

Model	A	B	F	F'	G	H	Machine weight (t)	Operating weight (t)	Min. dimensions when delivered	
									Min. width G'	Min. disassembled height H'
RCS-100/10SPXG	1000	950	2280	3380	1530	2140	3.0	3.4	1520	1600
RCS-100/20SPXG	1000	1900	3300	4400	1530	2260	3.2	3.8	1520	1600
RCS-100/30SPXG	1000	2870	4270	5360	1530	2260	3.6	4.3	1520	1600
RCS-120/20SPXG	1200	1900	3440	4700	1700	2260	3.5	4.2	1700	1700
RCS-120/30SPXG	1200	2870	4410	5670	1720	2380	4.0	5.0	1720	1700
RCS-120/40SPXG	1200	3820	5420	6670	1720	2380	4.5	5.8	1720	1700
RCS-130/20SPXG	1300	1900	3480	4800	1800	2260	4.0	4.8	1800	1770
RCS-130/30SPXG	1300	2870	4450	5770	1800	2380	4.3	5.6	1800	1770
RCS-130/40SPXG	1300	3820	5470	6780	1800	2390	4.6	6.2	1800	1770

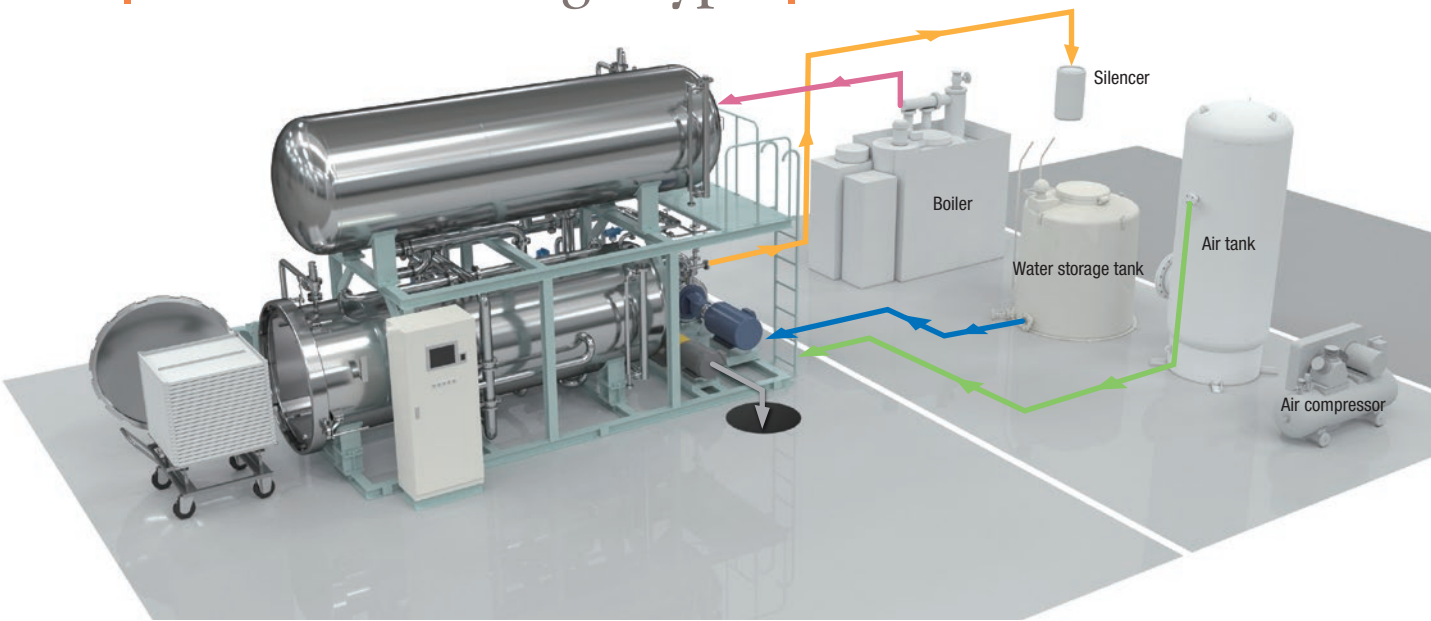
## Utility

Model	Content m <sup>3</sup>	Processing liquid ℓ	Steam kg/batch	Required boiler t/h	Equipment power kW
RCS-100/10SPXG	0.98	150	71	0.75	12
RCS-100/20SPXG	1.73	200	105	1.0	14
RCS-100/30SPXG	2.49	260	149	1.5	19
RCS-120/20SPXG	2.54	280	160	1.5	19
RCS-120/30SPXG	3.64	390	221	2.0	23
RCS-120/40SPXG	4.71	490	280	2.5	31
RCS-130/20SPXG	3.02	300	185	1.5	21
RCS-130/30SPXG	4.30	400	253	2.0	24
RCS-130/40SPXG	5.56	500	321	2.5	31

## Auxiliary equipment

Air tank m <sup>3</sup>	Air Compressor kW	Water storage tank m <sup>3</sup>	Feed water pump kW	Cooling tower RT/kW	Water pump kW
0.5	1.5	0.5	0.75	30/0.75	3.7
1.0	2.2	0.5	1.5	40/1.5	3.7
1.0	3.7	0.5	1.5	60/1.5	5.5
1.0	3.7	0.5	1.5	60/1.5	5.5
1.5	3.7	1.0	2.2	100/2.2	7.5
1.5	5.5	1.0	2.2	125/3.7	11
1.0	3.7	0.5	2.2	80/2.2	5.5
1.5	5.5	1.0	2.2	100/2.2	7.5
2.0	5.5	1.0	2.2	125/3.7	11

## Hot Water Storage Type



### Effective Use of Buoyancy and Liquid Flow

#### Full-water heating/cooling

With the hot water storage type, the processing tank is filled with water, making it possible to heat and cool a variety of products regardless of container type or size. Customers can select not only trays but cages, can increase the product quantity loaded in the processing tank, and select the buoyancy-driven processing system.

#### Dispersion of uniform water flow

By switching the water flow in the processing tank, and using slitted liquid-releasing trays in the center, water flow is dispersed to every area of the product trays. This ideal system makes uniform heating possible.

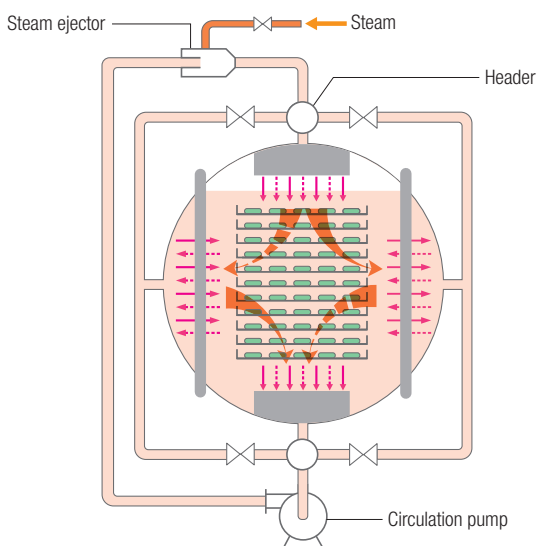
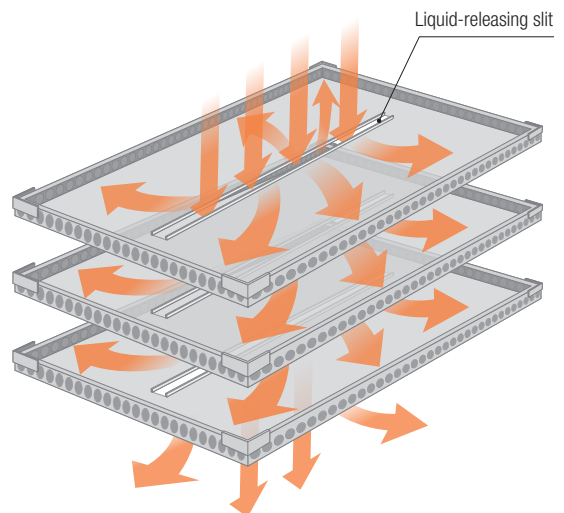


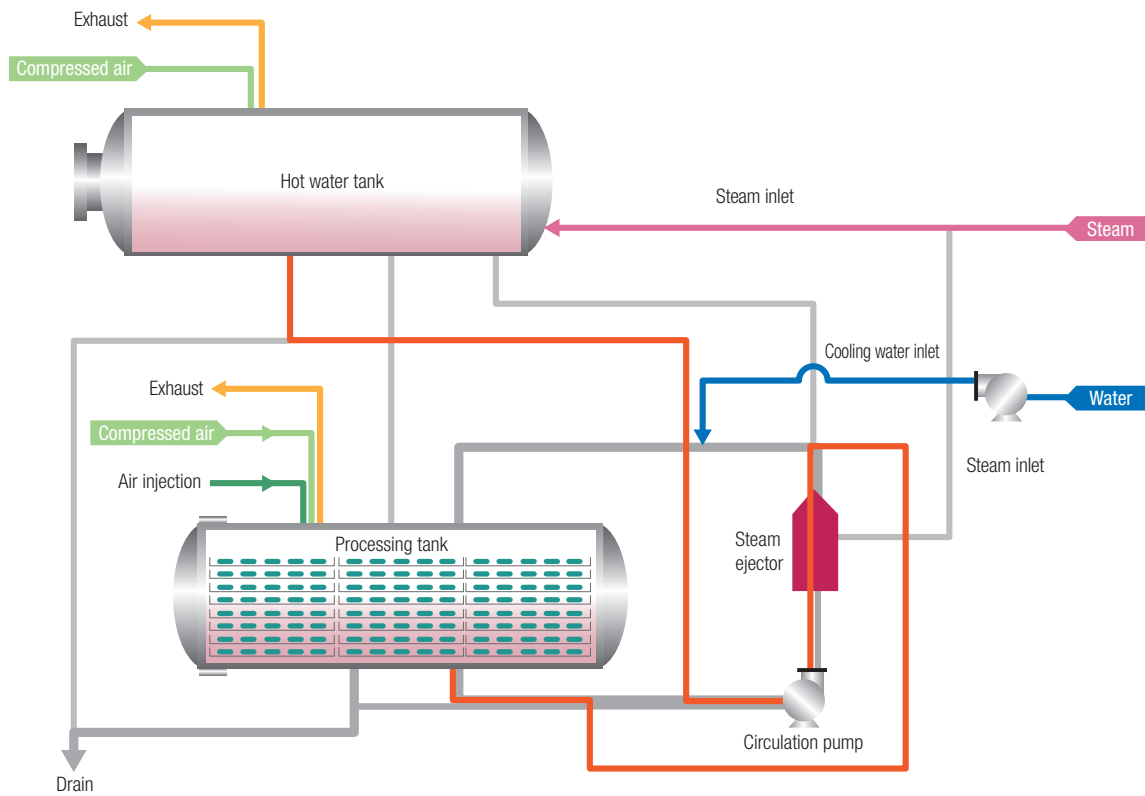
Image of uniform water flow dispersion



Liquid-releasing tray



● Flow sheet



● Rapid processing

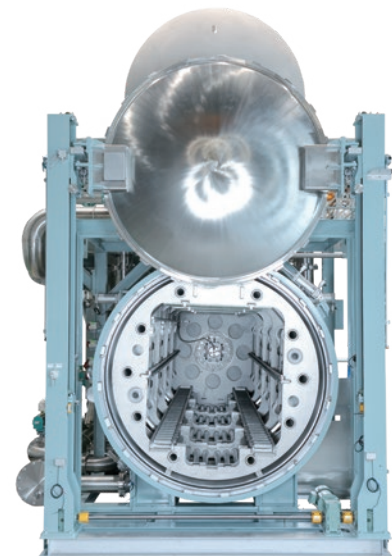
By preparing hot water in a hot water tank at times other than the sterilization process, time can be utilized more effectively. Also, since hot water prepared in the hot water tank is simultaneously injected into the processing tank when operation starts, high-temperature processing is possible from the initial stage of the sterilization process, which reduces time.

● Hot water recovery system

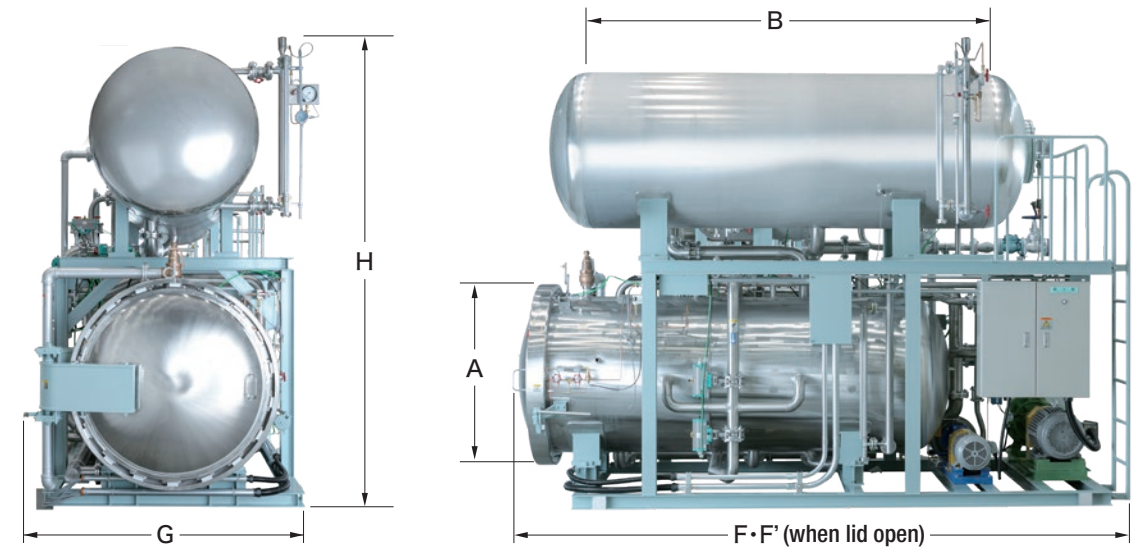
With the hot water storage type, recovering the hot water used in sterilization in the hot water tank enables repeated use and thus reduces the amount of steam used.

● Availability of rotating type (option)

High-viscosity products that are sealed in large commercial-use cans and large-capacity pouches take time to be heated to the center. By using a rotating type (option), you can reduce the time required to heat products to the center.



Rotating type (option)



■ Processing capacity (pouches) Equivalent size of pouch: 130 x 170 x 20 mm

Type	Item	Actual dimensions/basket (mm)	Stacked layers/basket	Pouch capacity/tray	Pouch capacity/basket
RCS-60		400×940×380	14	15	210
RCS-100		620×940×660	24	20	480
RCS-120		820×940×790	29	30	870
RCS-130		860×940×870	32	30	960

RCS-130/40G

Tank diameter, cm

Tray carts x10

G: Air-containing container processing system

■ Dimensions (mm)

Model	A	B	F	F'	G	H	Machine weight (t)	Operating weight (t)	Min. dimensions when delivered	
									Min. width G'	Min. disassembled height H'
RCS-60/10G	600	1220	2040	2750	1200	2200	1.3	1.85	1270	2200
RCS-60/20G	600	2200	2860	3570	1230	2250	1.4	2.4	1310	2250
RCS-100/20G	1000	1950	3430	4520	1920	2970	2.5	5.5	1830	1880
RCS-100/30G	1000	3050	4500	5600	1930	2970	3.0	7.5	1840	1910
RCS-100/40G	1000	4000	5400	6500	1930	2970	3.5	9.0	1840	1910
RCS-120/20G	1200	1950	3530	4730	2120	3420	3.5	8.0	2040	2100
RCS-120/30G	1200	3050	4630	5830	2120	3420	4.0	10.5	2040	2100
RCS-120/40G	1200	4000	5580	6850	2160	3430	5.0	13.5	2080	2150
RCS-130/20G	1300	2000	3720	4980	2220	3570	4.0	9.5	2140	2160
RCS-130/30G	1300	3050	4720	5970	2260	3580	4.5	12.0	2180	2200
RCS-130/40G	1300	4000	5720	7070	2260	3580	5.5	15.5	2180	2200

■ Utility

Model	Content m <sup>3</sup>	Processing liquid ℓ	Steam kg/batch	Required boiler t/h	Equipment power kW
RCS-60/10G	0.34	250	15	0.15	10
RCS-60/20G	0.59	450	30	0.25	7
RCS-100/20G	1.69	1250	77	0.5	18
RCS-100/30G	2.45	1850	104	0.75	26
RCS-100/40G	3.20	2400	150	1.0	33
RCS-120/20G	2.48	1850	125	0.75	26
RCS-120/30G	3.57	2650	185	1.0	33
RCS-120/40G	4.65	3500	247	1.5	48
RCS-130/20G	2.95	2400	150	1.0	33
RCS-130/30G	4.22	3150	212	1.5	48
RCS-130/40G	5.50	4300	286	2.0	50

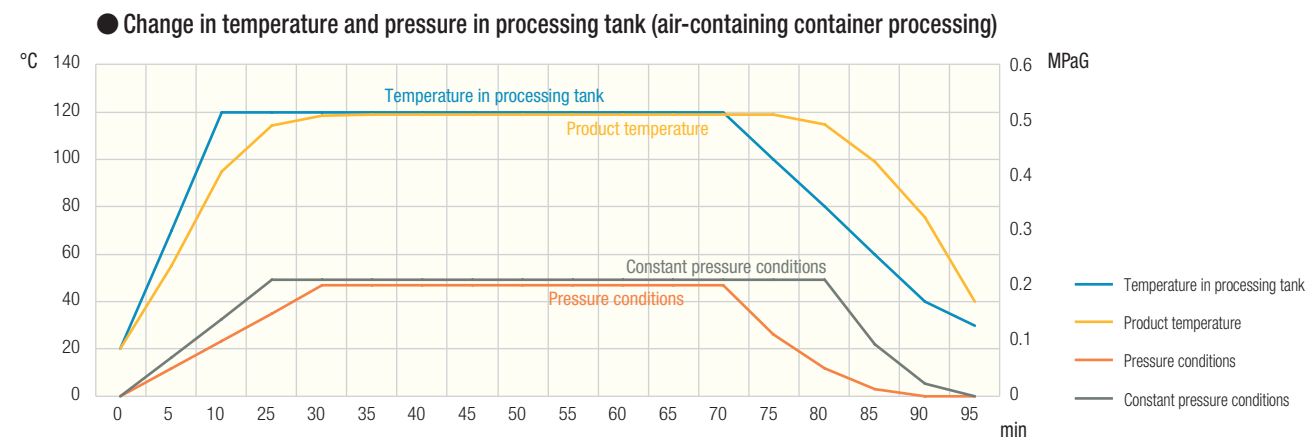
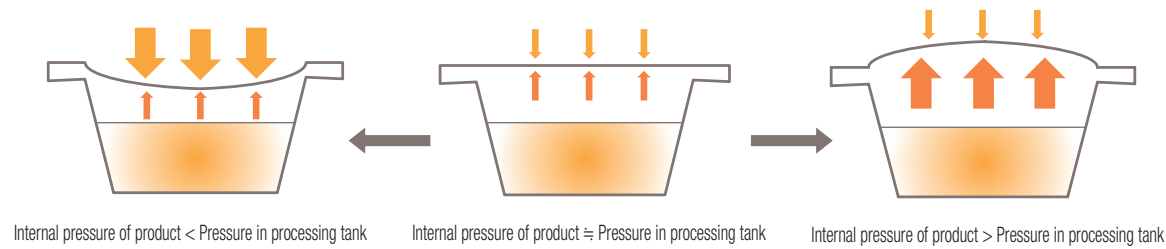
■ Auxiliary equipment

Air tank m <sup>3</sup>	Air Compressor kW	Water storage tank m <sup>3</sup>	Feed water pump kW
—	3.7	0.5	3.7
0.5	0.75	1.0	3.7
1.0	2.2	2.0	11
1.0	3.7	3.0	15
1.5	5.5	4.0	18.5
1.0	3.7	3.0	15
1.5	5.5	4.0	18.5
2.0	5.5	5.0	30
1.5	5.5	5.0	18.5
2.0	5.5	5.0	30
2.5	7.5	6.0	30

## HISAKA Core Technology

### ● Air-containing container processing system [GGG]\* Patent acquisition

If a food container with air inside is heated or cooled, the container may deform or break. HISAKA sterilizers achieve uniform temperature distribution and precise pressure control. Furthermore, utilizing HISAKA's own theoretical formulas for thermal calculations, container gas phase pressure changes are simulated, making it possible to control food container deformation and breakage.



\*GGG: Guarantee Good Goods

### ● Production management support function in manufacturing process

A recorder that records operation data is installed as standard equipment. In case data is accidentally deleted or lost, backup data can be saved by connecting USB or other storage medium to the control panel. Recorded operation data can be used in the "continuous management of heating temperature and heating time," an important management item in HACCP.



Control panel display (example)

#### [Data that is automatically saved in control panel]

- (1) Manufacturing results PDF (operation date/time, sterilization temperature, and process time, etc.)
- (2) Temperature graph JPG
- (3) Operation information (operation date/time, sterilization temperature, and process time, etc.)
- (4) Past error information, operation history

## Additional Options – Specifications

### ● F-value computer

This system collects and manages temperature and F value data by simultaneously measuring product temperature and calculating F value, which are important control items in the sterilizing process of food and pharmaceutical products, and is useful for confirming sterilization strength.



### ● Production management system (Flavor Ace Master: FAM System)

It effectively supports production and quality control of food manufacturing processes, operational data management and documentation of sterilizer. It is useful for analyzing and managing data in the development of foods, their processing methods and sterilization conditions.

### ● Product temperature simulation system (Parameter and Simulation System: PASS)

This system supports sterilizer management by collecting and analyzing sterilizer operation data, and automatically preparing and outputting sterilizer daily operation reports.



### ● Automation support

It is possible to design sterilizers for production lines that automatically transfer products.

- ▶ Automation of door opening/closing
- ▶ Design of tank interior conveyor tailored to automatic transfer systems  
Examples: Tank interior free roller, tank interior drive roller, drawer unit
- ▶ Design of tray for automatic transfer



Automatic door (example)



Tank interior free roller

### ● Overseas support

The Process Engineering Division can design and manufacture systems that meet the standards below, providing support for business development outside Japan.

- ▶ U.S. Food and Drug Administration (FDA) certification  
We can design systems that meet FDA standards.
- ▶ American Society of Mechanical Engineers (ASME) standards  
Established by the ASME, these standards are for pressure vessels.
- ▶ Manufacture License of Special Equipment People's Republic of China  
Acquisition of this license is required in order to export, sell, install, or use designated "special equipment" in China when such equipment is designed and manufactured in Japan.



ASME



Manufacture License of Special Equipment  
People's Republic of China



## Full Automatic (FA: Factory Automation) and Semi-Automatic (FAU: Factory Automation Unit) Transfer Systems

### Line design centering on retort sterilizer

- ▶ As a retort system manufacturer, it is possible to propose continuous transfer systems centering on a sterilizer.
- ▶ It is possible to design production lines utilizing trays used with an existing retort sterilizer. We have designed systems that produce from 3000 units/h on up. In preparation for future labor needs, we offer a safe and secure manufacturing process.
- ▶ Our proposals start from the transfer system layout.

### Reliability and record of performance

- ▶ We also have extensive experience and an excellent reputation in the pharmaceutical industry, where advanced technology and reliability are musts.

### Support for a variety of products

- ▶ Customers can select the method of transfer, such as shuttle or suction system, according to their product.



Shuttle system

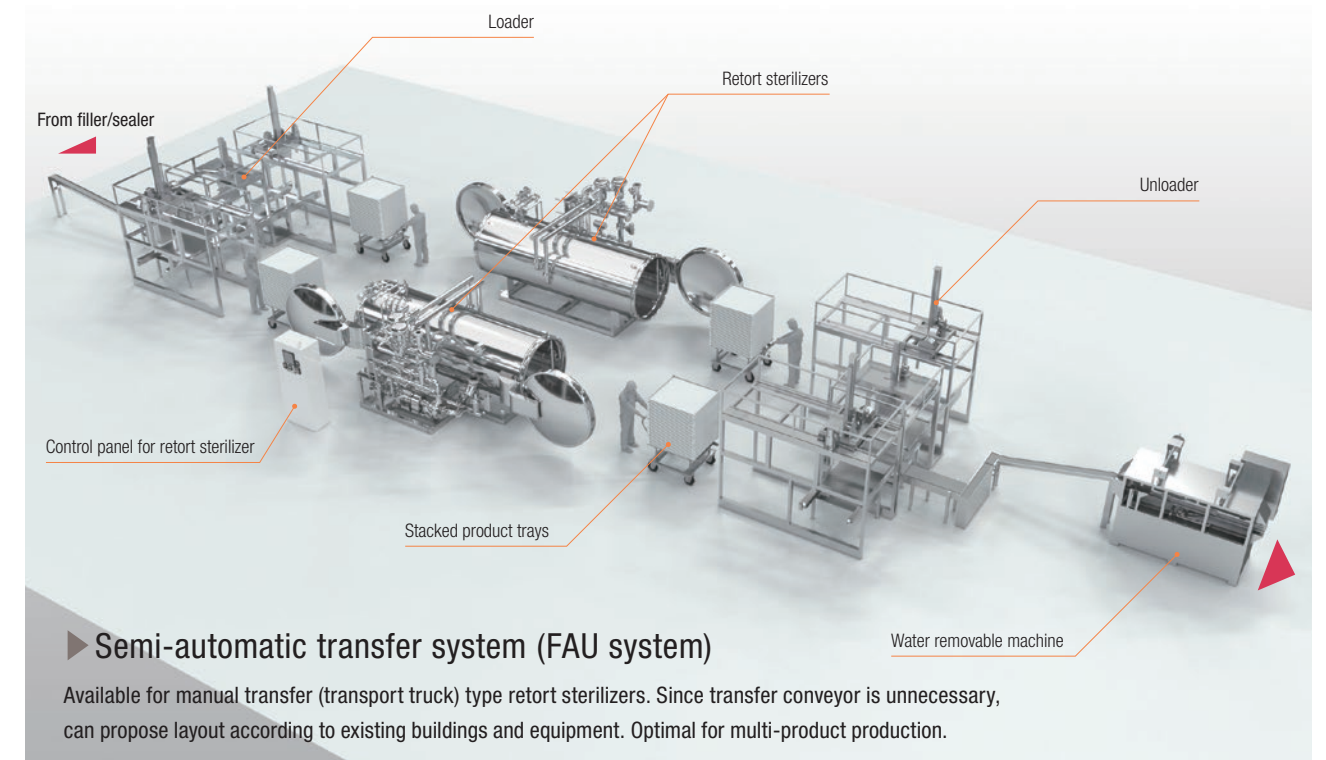
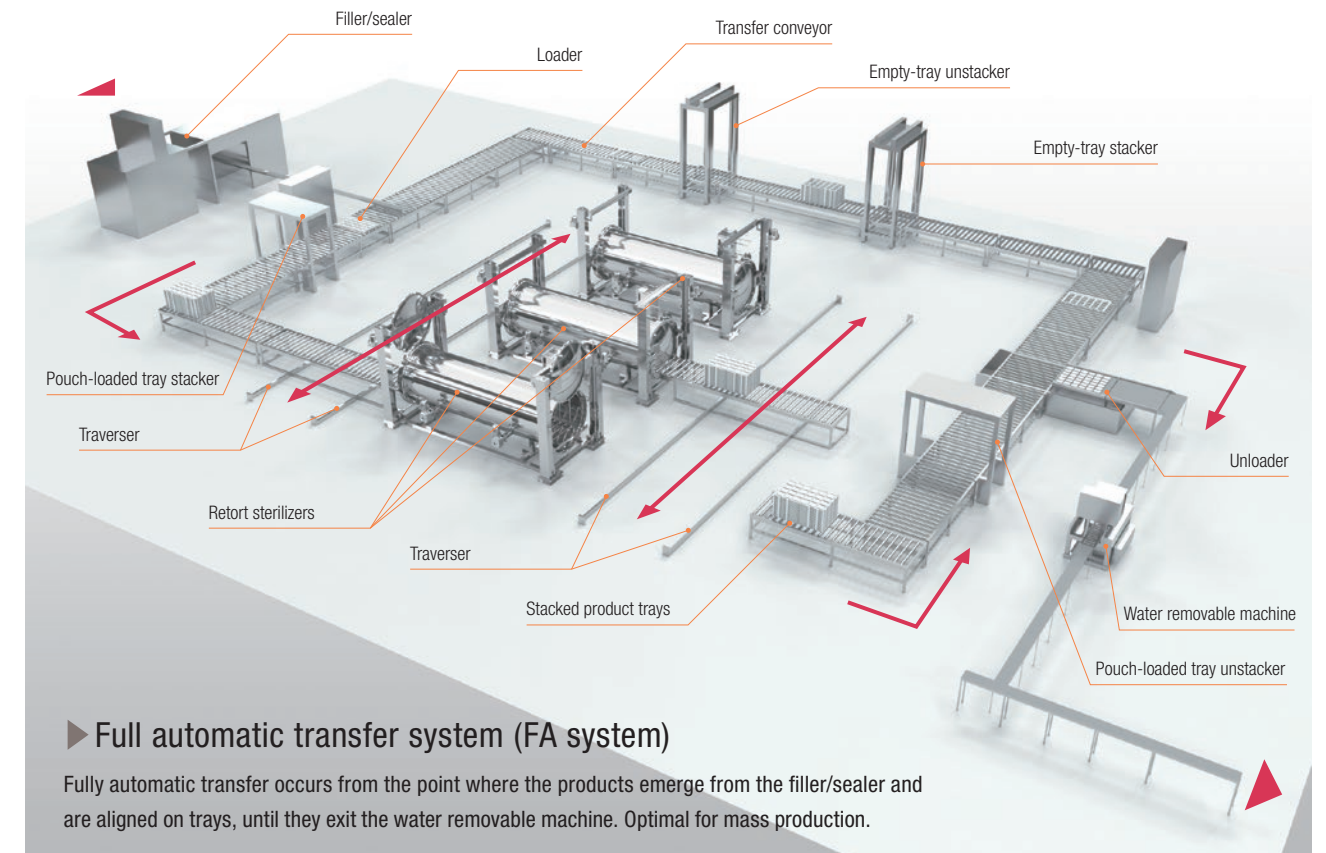


Robot suction system



Automatic transfer system

### Examples of introduction





## Test Laboratory Information

At HISAKA, we accept requests for testing of products brought in to our test laboratory from customers who are considering introducing equipment or developing new products.

Utilizing know-how gained through experience with a variety of products, we help customers find solutions to the issues they face.

### Flow leading to equipment installation

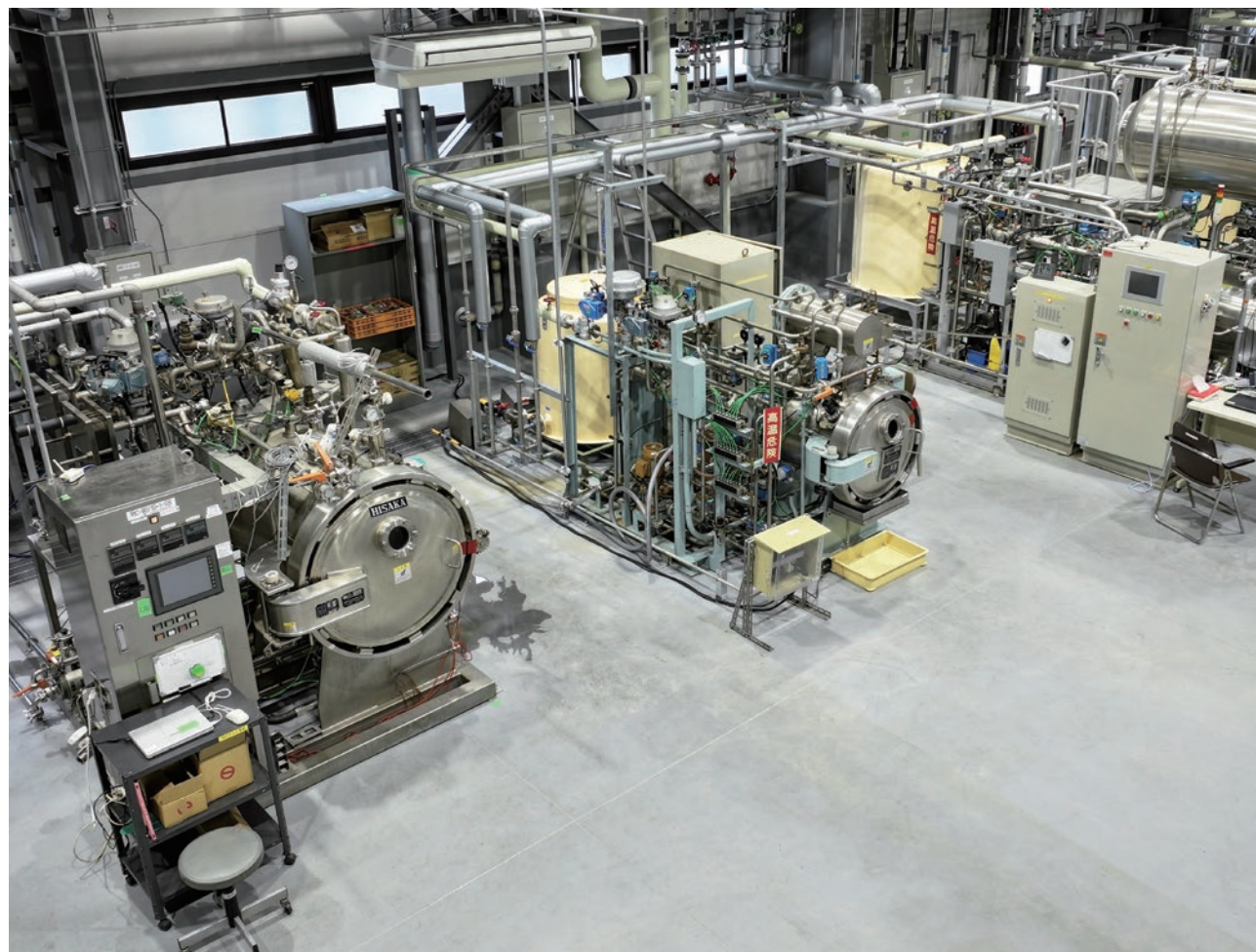


### HISAKA testing machines line-up

Retort sterilizers: 3 units; Liquid continuous sterilizers: 1 unit each for 3 types; Concentrators: 4 units each for 3 types

### Testing machine rental service

Retort sterilizer (spray type), plate heat exchanger, F-value computer. etc.



Development test laboratory

## Pilot sterilizer

### Hot water spray type

#### RCS-40SPXTG

W1130 × L1420 × H1700mm

- Small pressure vessel (\*Annual performance inspection not required.)
- Spray type, minimum size

##### Specifications

- |   |   |
|---|---|
| ● Processing capacity: 8 kg/batch                                     | ● Pressure control: Constant-pressure/air-containing container processing |
| ● Max. working pressure: 0.3MPa                                       | ● Processor: Stationary type  |
| ● Max. working temperature: 130°C                                     | ● Heating capacity: 20 to 120°C in 10 minutes                             |
| ● Wetted part material: SUS316  | ● Temperature distribution in tank: ±0.5°C or less                        |
| ● Sterilization tank size: Inner diameter = 400 mm<br>Length = 500 mm | ● Equipment weight: 850kg   |
| ● Effective liquid volume: 15L  | ● Utility   |
| ● Heating method: Hot water spray heating                             | Proper boiler capacity: 70kg/h  |
| ● Cooling method: Spray cooling                                       | Cooling water: 200L/batch   |
|   | Equipment power: 2.9kW  |



RCS-40SPXTG

#### RCS-60/10SPXTGS

W1450 × L2280 × H1950mm

- Available for testing of large product samples

##### Specifications

- |   |   |
|---|---|
| ● Processing capacity: 28kg   | ● Pressure control: Constant-pressure/air-containing container processing |
| ● Max. working pressure: 0.5MPa                                     | ● Processor: Stationary type  |
| ● Max. working temperature: 140°C                                   | ● Heating capacity: 20 to 120°C in 10 minutes                             |
| ● Wetted part material: SUS316                                      | ● Temperature distribution in tank: ±0.5°C or less                        |
| ● Processing tank size: Inner diameter = 600 mm<br>Length = 1000 mm | ● Equipment weight: 1600kg  |
| ● Effective liquid volume: 50L                                      | ● Utility   |
| ● Heating method: Hot water spray heating, steam heating            | Proper boiler capacity: 70kg/h  |
| ● Cooling method: Spray cooling, full-water cooling                 | Cooling water: 500L/H   |
|   | Equipment power: 6.2kW  |



RCS-60/10SPXTGS

### Hot water storage type

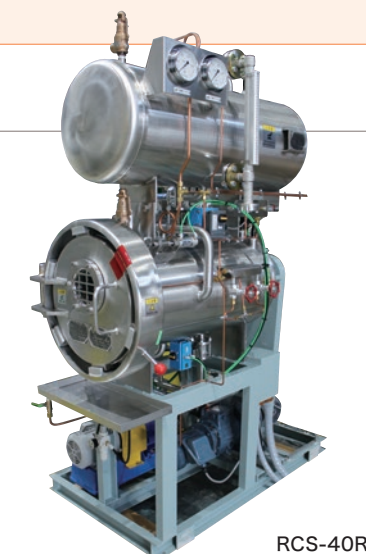
#### RCS-40RTGN

W1620 × L1900 × H2000mm

- Minimum size with hot water storage type
- Also available for testing of rotating type

##### Specifications

- |  |   |
|--|---|
| ● Processing capacity: 10kg  | ● Cooling method: Replacement/recovery                                    |
| ● Max. working pressure: 0.6MPa                                    | ● Pressure control: Constant-pressure/air-containing container processing |
| ● Max. working temperature: 150°C                                  | ● Processor: Stationary type, rotating type                               |
| ● Wetted part material: SUS316                                     | ● Heating capacity: 20 to 140°C in 40 minutes (preparation heat-up time)  |
| ● Processing tank size: Inner diameter = 400 mm<br>Length = 800 mm | ● Temperature distribution in tank: ±0.5°C or less                        |
| ● Hot water tank size: Inner diameter = 400 mm<br>Length = 980 mm  | ● Equipment weight: 900kg   |
| ● Effective liquid volume: 75L                                     | ● Utility   |
| ● Heating method: Hot water heating, steam heating                 | Proper boiler capacity: 50 kg/h   |
|  | Cooling water: 150L/H   |
|  | Equipment power: 5.1kW  |



RCS-40RTGN



## HISAKA After-Sale Service for Food Safety and Security

Should you require a visit by a Customer Service Section representative for after-sale service or maintenance of your sterilizer, we will of course honor your request. We will also respond smoothly to emergency inquiries.

### Information on performance inspection

Retort sterilizers rated as class I pressure vessels require an annual performance inspection witnessed by the Japan Boiler Association. HISAKA will send the customer a "Notification of Performance Inspection" three months prior to the inspection deadline. A HISAKA service representative will inform the customer of the sterilizer inspection deadline and maintenance necessary before the inspection.

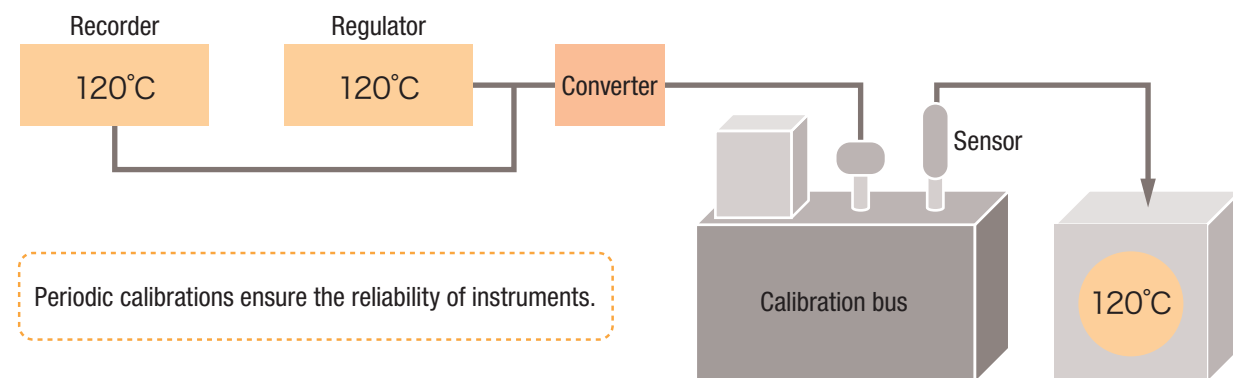
If you request maintenance by HISAKA prior to the performance inspection, simple checks and other service will be provided as preventive maintenance.

### Information on calibration

For continuous use of the sterilizer and to ensure that instruments (temperature gauges, pressure gauges, and timers) display correct values, periodic calibrations are recommended. An increasing number of customers are taking these steps in Japan according to HACCP requirements. HISAKA also provides calibration services, and issues calibration certificates and inspection certificates upon completion.

**Submitted documents**

- Calibration certificate
- Configuration drawings
- Loop inspection report
- Calibration results
- Traceability flowchart



### Information on periodic checks

We will check the status of valves, electronic devices and similar items, and provide guidance on recommended replacement parts and substitutes for parts when manufacturing has been discontinued. We will inform you of the priority of recommended replacement parts, and propose systematic maintenance plans. We can also simultaneously perform calibrations and maintenance prior to performance inspections in line with the customer's production plans.

### Solution service

#### Control panel update and sequencer replacement

We will recommend replacements for the latest HACCP-compliant control panels and sequencers, and will even check operation and witness production when updates are made.

#### Improvement proposals

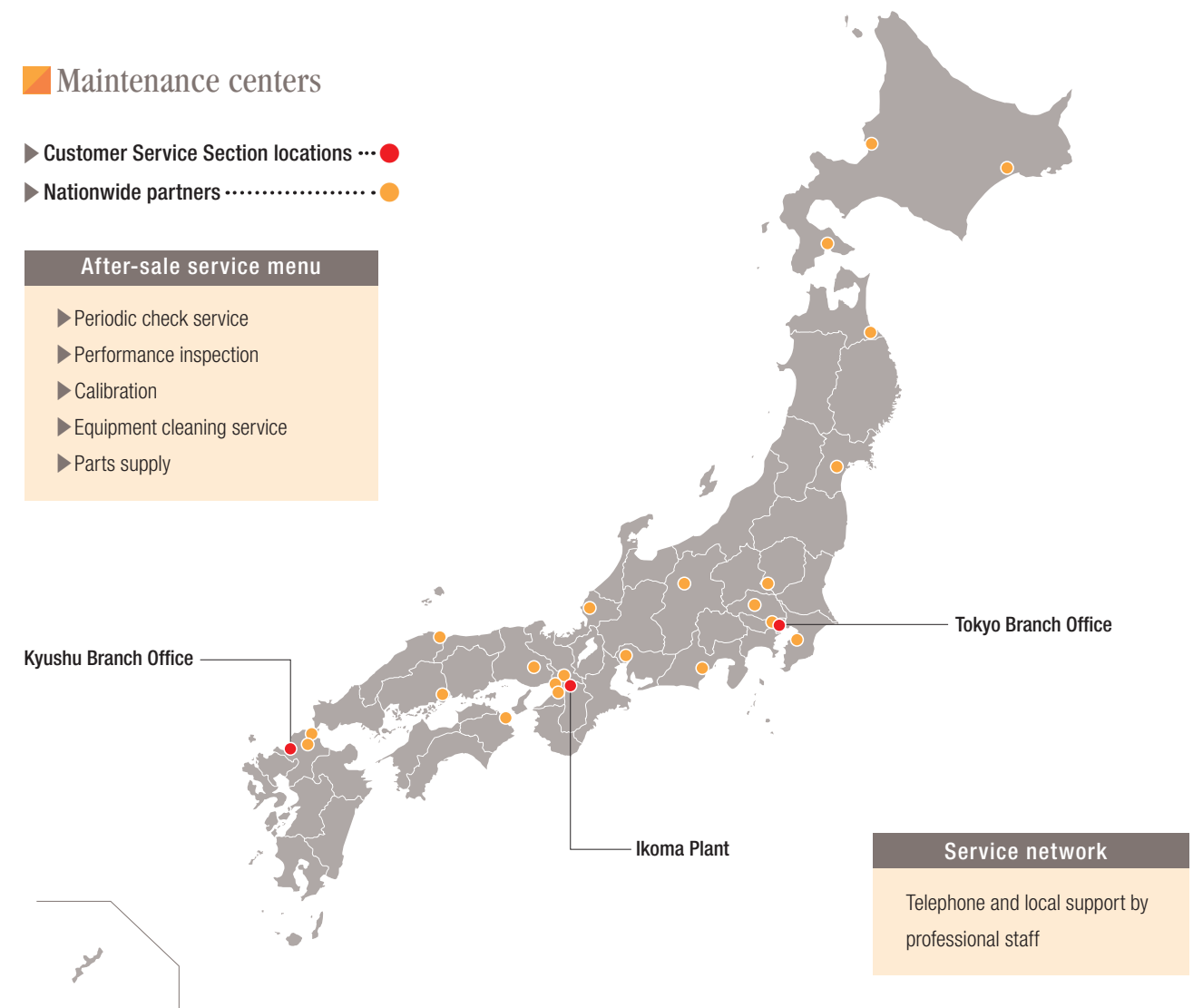
We will provide guidance on the latest systems for improving productivity and quality and saving energy.

### Maintenance centers

- ▶ Customer Service Section locations ... ●
- ▶ Nationwide partners ..... ●

**After-sale service menu**

- ▶ Periodic check service
- ▶ Performance inspection
- ▶ Calibration
- ▶ Equipment cleaning service
- ▶ Parts supply



**[Customer Service Section, Manufacturing Department] Process Engineering Division, HISAKA Works, Ltd.**

- |   |   |  |
|---|---|--|
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