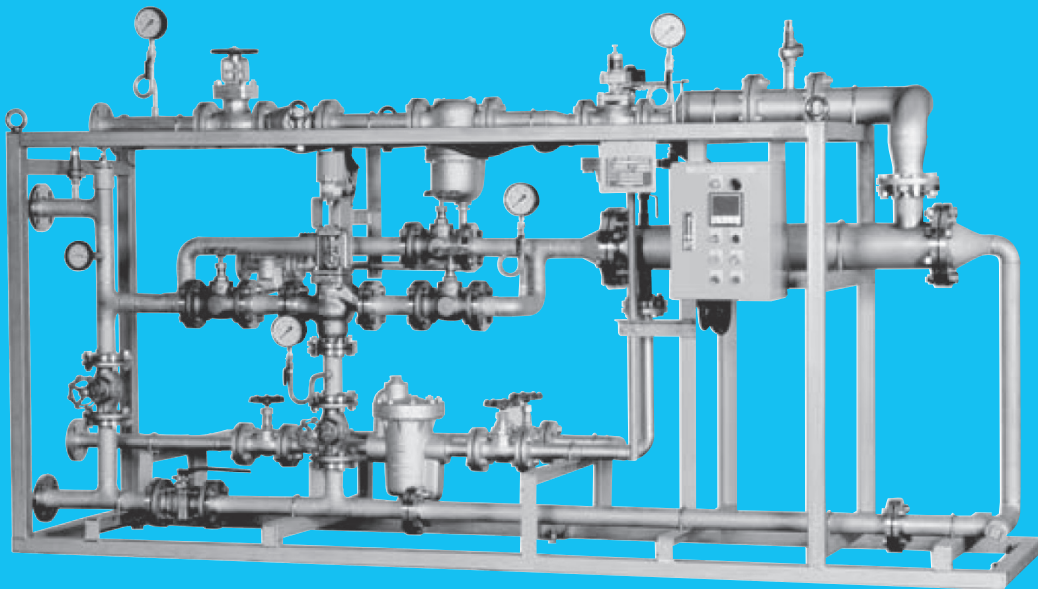


# Hot Water Navigator

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# 8





## Hot Water Navigator System

Yoshitake's Hot Water System can produce hot water only with steam and water. It can be used in wide range of fields, from production process such as cleaning or sterilization to handwashing or shower.

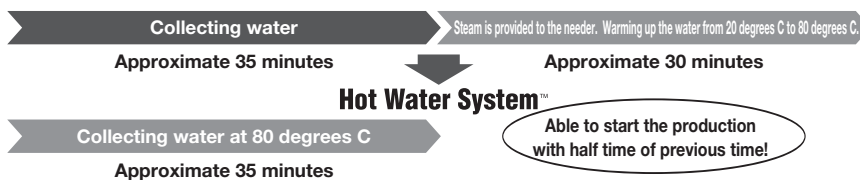


## Effective Utilization and Benefit of Hot Water System

### Time reduction

Hot water system can produce hot water instantly, hence waiting time for start of production can be shortened remarkably.

#### ■ Manufacturing process at food factory



\* This is a comparison in case that warming up the 7,000L of water from 20 degrees C to 80°C and collecting 80°C of hot water, 7,000L by using Hot Water Navigator.

### Disposal loss reduction of waste water

#### Bacteria risk reduction

Large effect of energy saving and CO<sub>2</sub> reduction can be obtained in the process of wasting residual water of previous day for bacteria risk reduction.

#### ■ Comparison between disposal loss of residual water in equipment and storage tank

Heat energy reduction: Approx. 1,356 GJ/year
Steam amount: Approx. 616 t/year
Reduction amount: Approx. 3,064,000 JPY/year

\* Comparison between 18 m<sup>3</sup> of Storage tank and hot water navigator. In case that warming up 20°C of water to 80°C by saturated steam 0.1 MPa (steam unit price 4000 JPY/t), disposal of waste water 300 times/year, diversion of water unit price 200 JPY/m<sup>3</sup>.

### Hot water storage tank is unnecessary

#### Propagation prevention of Legionella

It is said that Legionella can be easily propagated in a tank where there is backwater in flow, such as hot water storage tank.

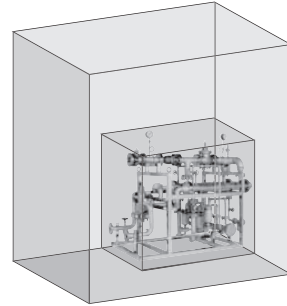
Hot water system do not require the use of the tank, so reliability of sanitary as a system is increased.

### Space saving/Easy and short construction period

Since it does not require to keep hot water in tank, larger three-dimensional space saving can be obtained, compared with storage tank system.

Due to easy construction only connecting steam and water, construction period is very short and it can be used soon.

- Occupied area becomes approx. 1/3
- 3 dimension area becomes approx. 1/6.
- \* Comparison of 18 m<sup>3</sup> storage tank and Hot water navigator.



### Energy saving

It is designed as energy saving to use low steam pressure including high latent heat below 0.1 MPa.

In case of indirect heating system, because it uses latent heat of steam, system using low steam pressure including much latent heat is effective.

### Increased reliability of sanitary

Due to indirect heating, water quality of steam does not affect hot water.

### Safety design

#### Fail Safety

Due to water amount control by differential pressure control of water pressure, even if diaphragm is broken, the passage to heat exchanger is shut down and water temperature decreases.

### No requirement of notification or inspection.

Since it is low pressure & compact design, notification as pressure vessel class 1 and every year regular inspection is not required.

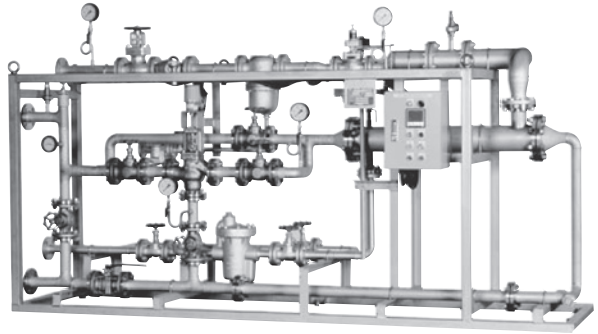
# Made-to-Order Product

# HN-300M

Handwashing, shower   Floor cleaning   Appliance cleaning   Equipment cleaning



Production Process   SIP (Sterilize in Place)   CIP (Cleaning in Place)



8 Hot Water Navigator

### Adoption of digital three-way valve control system

High-accuracy temperature control can be made due to PID control based on feed-forward control.

### Easy change by digital temperature setting

Since it is possible to change set temperature easily, the changing the temperature for all application had been efficiency.

### High-temperature/High flow rate type

It can be used in wide range of usage such as from washing at 50-60 degrees C, handwashing, shower to sterilization at 80-90 degrees C.

### Stainless steel shell & tube

Due to adoption of colgate tube, heat transfer area is large and heat exchange capability is excellent.

### Maximum and minimum temperature alarm can be set (Warning Buzzar, Emergency shut down of steam supply, emergency shut down of line pump.)

It is possible to customize control panel.  
Since external input/output is possible, warning buzzer, emergency shutdown of steam supply, and line pump shutdown can be set according to request.

### Fluid temperature customize

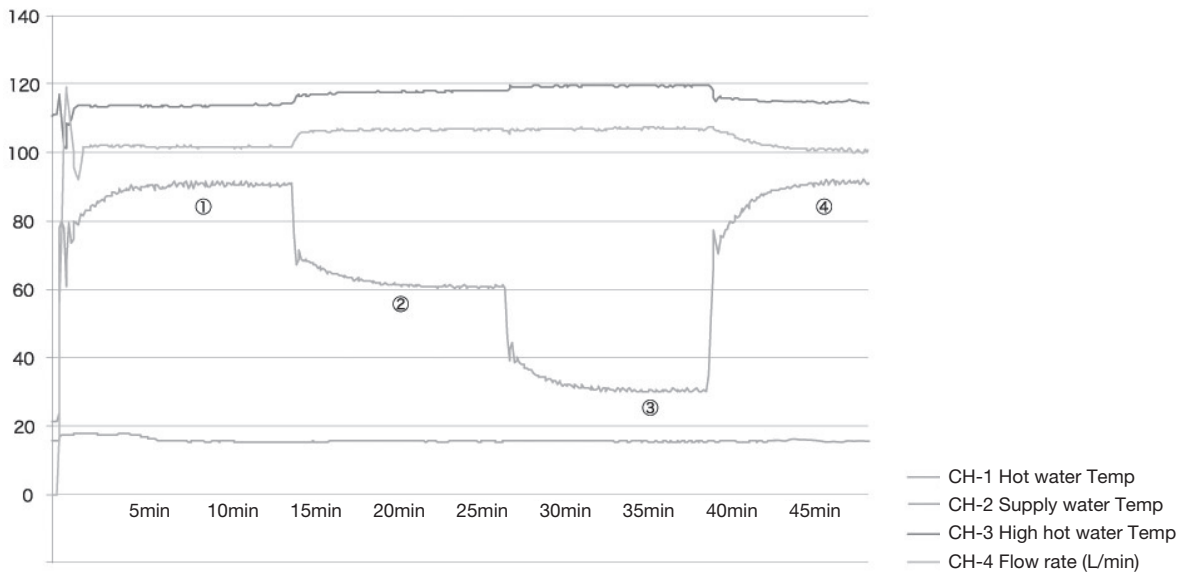
Regarding fluid temperature customize, we can make customization according to customers usage condition and situation.

■HN-300M series is made to order product. We produce product appropriate for customer's usage with proposal.

Model		HN-300M
Fluid	Heating	Steam
	Heated	Water
Steam supply pressure		0.6-1.0 MPa
Steam pressure inside unit		0.15 MPa
Water supply pressure		0.2-0.7 MPa
Temperature adjustment range		30-93 degrees C
Minimum temperature difference		15 degrees C
Maximum water supply pressure loss		0.07 MPa
Material	Three way valve body	Stainless steel
	Shell	Stainless steel
	Tube	Stainless steel (SUS316L)

Water supply temperature (°C)	Preset temperature (°C)	Flow rate (L/min) * Steam pressure (0.15 MPa)	
		Standard heat exchanger	Large heat exchanger
15	70	245	355
	80	200	300
	90	180	260
20	70	225	370
	80	215	310
	90	183	265

### ■HN-300M Hot Water Navigator Temperature Regulation Test Data



#### Setting condition

- Supply water: 18 degrees C    Setting of hot water temperature: ①90 degrees C, ②60 degrees C, ③30 degrees C, ④90 degrees C  
High hot water temperature: 120 degrees C    Setting of hot water flow rate: At the stage of 1, fixing 100 L/min by manual valve
- Setting ①: Hot water temperature is set to 90 degrees C, keeping hot water flow rate 100 L/min for 10 minutes (temperature rises to 90 degrees C within 4 minutes, regulated within  $\pm 1.5$  degrees C).
- Setting ②: Hot water temperature is set to 60 degrees C, keeping hot water flow rate 100 L/min for 10 minutes (temperature rises to 60 degrees C within 5 minutes, regulated within  $\pm 1.5$  degrees C).
- Setting ③: Hot water temperature is set to 30 degrees C, keeping hot water flow rate 100 L/min for 10 minutes (temperature rises to 30 degrees C within 5 minutes, regulated within  $\pm 1.5$  degrees C).
- Setting ④: Hot water temperature is set to 90 degrees C, keeping hot water flow rate 100 L/min for 10 minutes (temperature rises to 90 degrees C within 5 minutes, regulated within  $\pm 1.5$  degrees C).