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WATER TANK

PRESSURE VESSEL

HEAT EXCHANGER

INDUSTRIAL TANK

WATER TANK, EXCELLENT PRODUCT BY PUBLIC PROCUREMENT SERVICE, COMPACK UNIT, SYSTEM AIRCON

SUNGIL TECH ONE.,CO.LTD

SUNGIL TECH ONE CO.,LTD is a dedicated tank design and manufacturing company representing Korea based on creative, future-oriented, and exemplary corporate spirit centered on technology development.

History

1989. 01. 23 Sungil Facility Machinery Industry Co.,Ltd. was converted to legal entity.

1995. 10. 02 Capital increased to(₩350,000,000)

1996. 02. 08 Company name changed to Sungil Machinery Industry Co.,Ltd.

1997~1999 ISO9002 accreditation acquired. Metal construction business license acquired. Factory moved.

2000~2003 Awarded as an excellent partner company of DL E&C.
ISO9002 accreditation acquired. 4 cases of patents & utility models registered.
Water storage tank cleaning service added
KS certified water tank

2004~2006 Awarded excellent small & medium company
Seoul office moved to 201-9, Donggyo-dong
Awarded Presidential citation
Accredited as a MAIN-BIZ company
Capital increased to(₩557,000,000)

2007~2010 Company affiliated research institute was established.
Accredited as an INNO-BIZ company
Acquired KS A/ISO-4001 Environment Management System certification
Received award from Minister of Land, Transport and Maritime Affairs
Received award from Seoul City mayor
Received award from Minister of Knowledge and Economy.
Selected as a promising Small & Medium sized company of Gyeonggi-do province
Patent registered for 5 cases including Polyurea coating for water tank.

2011 Designated as an outstanding common brand procurement good (Clean Water)
4 Cases of SPES patent enrolled
SPES trademark registered

2012 Selected as an outstanding partner company of DL E&C.
Selected as an outstanding partner company of POSCO E&C.
Acquired SPES water tank K mark certification
Acquired Hygiene Safety standard KC certification

2013 Selected as an outstanding partner company of DOOSAN E&C.
Awarded Presidential citation
Designated as an outstanding good (PE complex water tank) by Public Procurement Service.

2014 Introduced AutoDesk simulation tank type structure mechanism
Water tank unit panel manufacturing method patent registered

2015 Patent for water tank panel with anti-corrosion structure by chlorine gas was enrolled.
Exposed vortex type water tank with insulation
Patent registration for wall construction method for water tank using PED S panel
Patent registration of waterproofing construction method for concrete bathtubs

2016 Received Appreciation plaque for outstanding partner company of Daelim Industrial
Double embossed pressed lining construction patent
Patent registration for unit panel for water tank with corner bracket
Patent for a water tank with rigid stiffening members

2017 Tripled the number of days to reach zero accidents (1,248 days)
Headquarters and Factory Expansion to 488 Daemyunghang-ro, Daegot-myeon

2018 Company name changed to SUNGIL TECH ONE CO.,LTD
Performance certification by Ministry of SMEs and Startups
Awarded citation from Public Procurement Service Administrator
Patent for smart type water tank with earthquake resistance
Patent for fastening structure of water tank top made of PE composite stainless steel plate
Patent for PE composite stainless steel sheet water tank
Enrolled as a Woman-owned business
PE composite stainless steel sheet water tank K-mark certification
Public Procurement Service Excellent Product Designation (2018261) {PE composite stainless steel plate water tank)
Registered as a mechanical engineering business and started equipment business

2019 Started issuing structural engineer's certificate for Aseismatic water tank application
Started COMPACT UNIT business and air conditioner business

2020 Designated as a promising company to enter the overseas procurement market (G-PASS company)
Aseismatic Dry PAD Patent No. 0~2006932
Acquired Gyeonggi-do Smart Factory Deployment Support Project
Earthquake-resistant prefabricated water tank patent
Earthquake-resistant structure of water tank top Patent No. 10-2216686

2021 Patent No. 10-2278054 for reinforcement structure of earthquake-resistant water tank
Aseismatic Base frame dry pad for water tank Patent No. 10-2323541

2022 Headquarters relocated to 162, Yulsaengjungang-ro, Daegot-myeon, Gimpo-si, Gyeonggi-do, Korea
1504500 Safety and Health Management System Certification

2023 Patent registration of earthquake-resistant prefabricated water tank with PE composite stainless steel sheet edge reinforcement structure (No. 10-2591109)
Patent registration of anti-vortex device for an assembly water tank for firefighting water (No. 10-2591110)
MAS Third Party Unit Price Contract Extension (Hot Water Tank)
MAS Third Party Unit Price Contract Extension (Water Tank)

Excellent Product by Public Procurement Service | Hygiene safety standard | KS Mark | Performance certification | KS A/ISO 9001, 14001 | Group standard certificate | Korea Intellectual Property Office | INNO-BIZ | Company affiliated research institute

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- FILTER TANK
- OIL STORAGE TANK
- FOOD TANK

01.

Water Storage Tank Products

SUNG IL TECHONE

- STS WATER TANK
- STS+TOP PLATE PDF TANK(SICP)
- PDF TANK
- SMC TANK
- STS LINNING & PE LINING
- ASEISMATIC DRY PAD STRUCTURE

WATER TANK

STS PANEL TANK-Water Storage Tank (STAINLESS PANEL TANK)

Outside : STS molded and processed panel (size can be changed)

Inside : STS Angle

Insulation: 50t of Urethane foam + 0.7t of AL JACKET (or Color Sheet)

Base frame: Base Frame (painting or galvanizing) (Channel-100~125 ×6.5 ×6 ×8.5t)

Fabrication: Fluorine gas TIG welding

Features of STS Water storage tank

Sufficient strength
STS plates are uniformly molded by 1.5 times the strength of mild steel and 6 times that of FRP and assembled into a dedicated welded structure to maintain high strength.

Clean and hygienic.
STS has strong corrosion resistance due to the formation of its own oxide film, and it is difficult to penetrate ultraviolet rays, so it is hygienic without water, moss, etc. (Chlorine gas coating inside welded part)

Good heat and impact resistance.
Perfect design function to last through fire and external impact protecting from damage

Economical
The design uses standard size stainless steel sheet , minimizing material loss during processing and reducing maintenance costs.

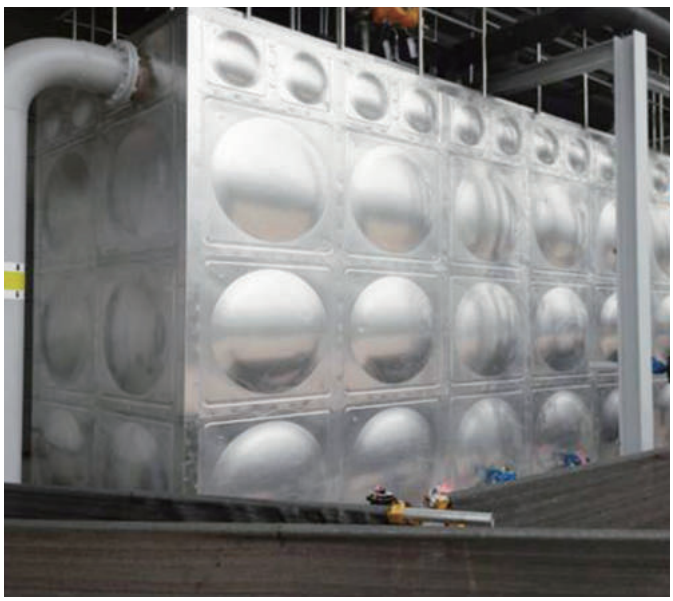
Available in a variety of capacities and easy to construct on site.
A variety of panel sizes are available for easy on-site assembly.

Aseismatic feature

The stainless steel welding integrated structure has the higher strength than Water storage tank made of any other materials and is safe from vibration and earthquakes caused by water flow.

WATER TANK

STS PANEL TANK-Water Storage Tank (STAINLESS PANEL TANK)



WATER TANK

STS PANEL TANK-Water Storage Tank (STAINLESS PANEL TANK)

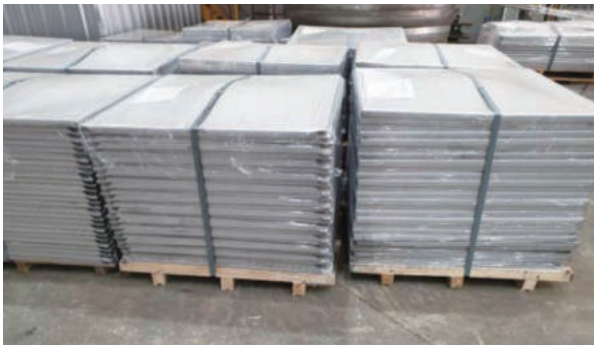
■ Factory manufacturing process

Raw materials warehousing

Forming process

Bending process

Cutting process



Bending process

Materials release

WATER TANK

STS PANEL TANK-Water Storage Tank (STAINLESS PANEL TANK)

■ On-site manufacturing process


Materials carry in


Installation of Base frame pad


Installation of bottom plate


Installation of Top plate


Installation of Internal Stiffeners


Side plate installation


Insulation work


Completion of Water storage tank

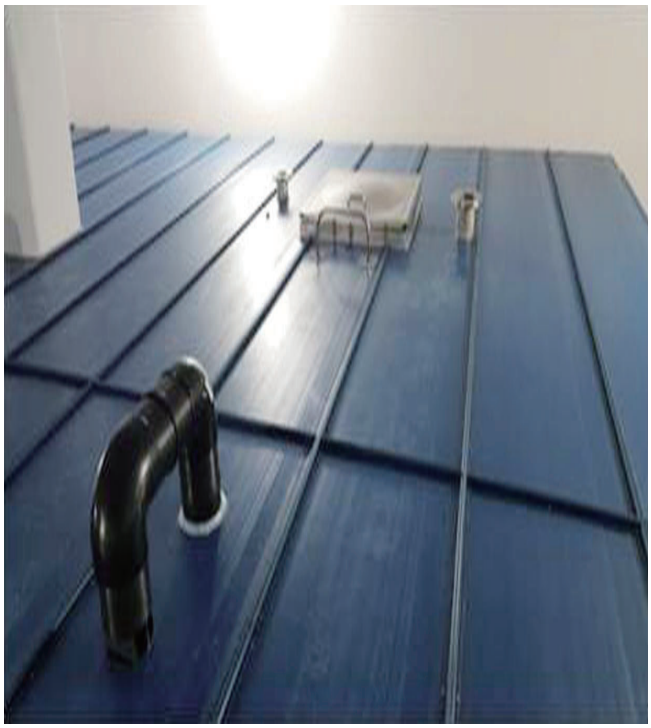
| Engineering scope |

Base frame engineering

- The Base frame must be constructed by the customer according to the specifications designed to take into account the durability of the ground at the tank Base frame location.
- The concrete strength of the Base frame must be 180kg/m2 or more and it should have physical properties.

WATER TANK

Upper plate (PDF)+STS PANEL TANK-Water Storage Tank (Designated number : 2018261)



Outside : STS molding processed panel
(size can be changed) + top PDF

Inside : STS Angle

Insulation : Urethane foam 50t+AL JACKET 0.7t
(or Color Sheet)

Base frame : Base Frame (Painting or Zinc plating)
(Channel-100~125 ×6.5 ×6 ×8.5t)

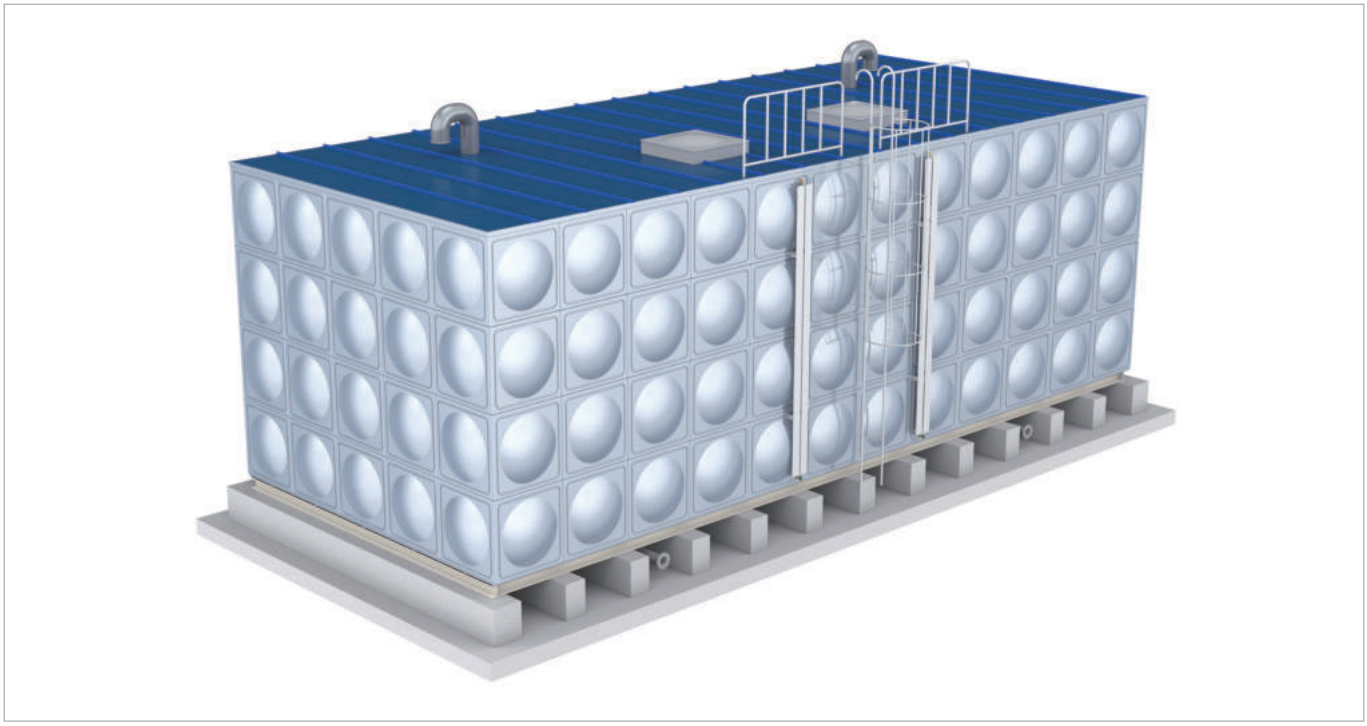
Fabrication: Fluorine gas TIG welding

Advantage of PE composite stainless steel sheet water tank (SICP)

- Cost can be saved by changing the top material.
- The top panel is flat for easy cleaning and less contamination.
- It has the highest strength, so it is not deformed notwithstanding upward movement and work.
- Corrosion and rust does not occur with the PE material at upper part.
- It reduces on-site welding and shorten the work period.
- Submission of seismic certificates and installation of fire extinguishing water quality improvement devices when applying fire extinguishing water

WATER TANK

Upper plate (PDF)+STS PANEL TANK-Water Storage Tank (Designated number : 2018261)



Structural features

- The material is strong, stable, and aesthetically pleasing.
- The structural integrity of the material makes it resistant to water vibration and earthquakes.
- The flat upper part surface makes it difficult for dirt to adhere.
- UV protection prevents moss and microbial growth.
- The use of urethane with the same shape as the plate provides good insulation.
- Verification is complete owing to the long time use.

Resistance against corrosion

- The upper PE panel has excellent corrosion resistance, so there is no corrosion.

Water tightness

- Welded structure makes it the most watertight and structurally safe.

Maintenance

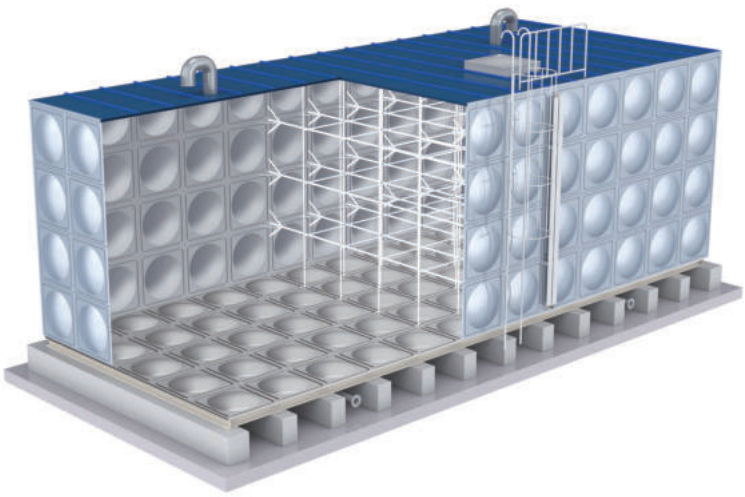
- It is easy to maintain because it can be constructed with a height of 2000mm on the first side.
- The upper part panel is flat for easy cleaning and less contamination.

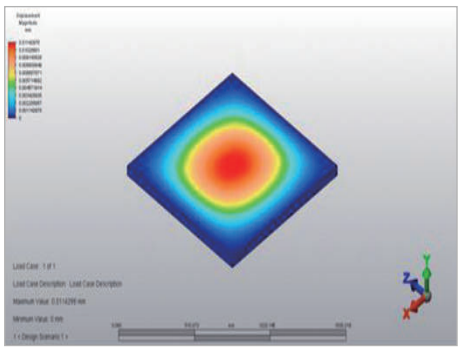
Earthquake resistance

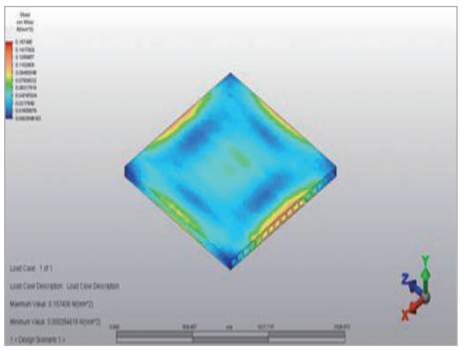
- The stainless steel welding integrated structure has the higher strength than Water storage tank made of any other materials and is safe from vibration and earthquakes caused by water flow.

WATER TANK

Upper plate (PDF)+STS PANEL TANK-Water Storage Tank (Designated number : 2018261)



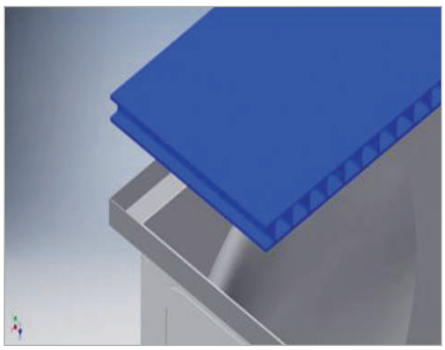




Top part PDF Paneling

- PDF panel is inserted at stainless steel Water storage tank's upper part to improve corrosion resistance in board not to be in contact with water
- Top plate durability is secured (When applying a load of 1ton to the Top plate, 0.014mm deformation occurs, and the stress distribution is good, making it an excellent upper plate structure.
  - Nastran result of structural analysis

Intersecting angles to prevent sagging



Installing Narrow Guides to Prevent Top Panel Disengagement

WATER TANK

PDF PANEL TANK-Water Storage Tank (POLYETHYLENE DOUBLE FRAME TANK)

Outside: Outer Frame (SS275) + PE corrugated sheet

Inside : PE SHEET+PE Pipe

Insulation : Double air-filled insulation +
COLOR SHEET 0.45t

Base frame : Base Frame (painted) +
(Channel- 100x50 × 5 × 7.5t Welding)

Manufacturing method:
arc welding + high frequency fusion

Features of PDF Water storage tank

Structural feature
It is a one-piece panel with high strength (suitable for large Water storage tank) and can be manufactured regardless of structure and size, especially the columns inside the Water storage tank can be built in. In addition, the double-structured panel forms an air layer and has a high insulation effect.

Resistance against corrosion
No corrosion and rust from chlorine gas. In addition, it has excellent chemical resistance (acid, alkali), no growth of germs such as algae and bacteria, and no corrosion by other corrosive substances.

Cleanness and hygiene
Materials certified for food and beverage use by the U.S. FDA and Japan's JPEC provide a clean, corrosion-resistant surface for superior hygiene and cleanliness, even with long-term use.

Superior watertightness
A perfect watertight effect can be achieved by installing PE SHEETS on top of each other and then thermosetting welding the joints by thermosetting.

Convenient maintenance.
Maintenance is convenient because internal structure is simple.

WATER TANK

SMC TANK-Water Storage Tank (Fiberglass Reinforced Polyester Water Tank)

Outside: SMC molded plate (standard plate)
Inside : Winding Pipe(Ø50 ×3t)
Insulation: Urethane foam 25t + (No finishing material)
Base frame : Bolt assembling with Channel J 125 ×65 ×6 ×8t Angle 75 ×75 ×6t(less than 3m)
Construction Method: Bolted

Features of SMC Water storage tank

Flexible capacity design
Can be installed flexibly depending on space and demanded capacity. And it can be disassembled and assembled again, being a modular unit.

High quality
We pursue the optimal system through strict design standards and quality control and reliable structural strength analysis. The basis of structural analysis is the design of safety factor for limit values. The optimal safety factor considered against the expected designed external force based on the physical properties of SMC material after long-term use for more than 15 years is the know-how of Sungil Clean Tank.

Perfect watertightness
It is completely watertight using a special resilient sealing material.

Convenient constructability
Since it is assembled and constructed on-site with standardized parts, it can be transported to the site and expanded or moved even in a small installation space.

Hygiene and durability
It prevents the growth of bacteria and germs in the water tank by completely blocking external light. In addition, the internal reinforcement uses STS+PET coating and drawn pipe to prevent corrosion and rust, and the external structure is hot-dip galvanized to resist corrosion.

WATER TANK

Water storage tank installation standard

[Exhibit 3.2] <Newly added May 17, 2012>

Water storage tank installation standard (Related with article 9-2)

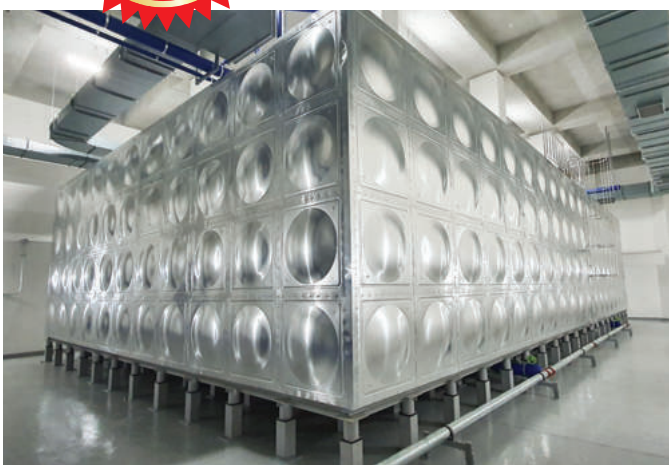
1. The manhole portion of the Water storage tank should be at least 100 centimeters away from structures (such as ceilings and beams), and other portions should be at least 60 centimeters away.
2. Install the water outlet at the bottom opposite the inlet, but raise it from the bottom of the Water storage tank to prevent sediment from leaking out, and install a water divider to prevent water from pooling in the Water storage tank.
3. Provide at least one square manhole with a length of at least 90 centimeters on each side or at least one round manhole with a diameter of at least 90 centimeters to allow easy access for cleaning personnel or equipment and to prevent dirt or other debris from entering through the manhole. However, manholes for small Water storage tanks of 5 cubic meters or less may be at least 60 centimeters on each side or in diameter.
4. Ensure that the sediment outlet is located at the bottom of the Water storage tank and that the bottom of the Water storage tank is sloped at least one hundredth toward the outlet for easy drainage.
5. Water storage tanks exceeding 5 cubic meters must be constructed to withstand water pressure when one Water storage tank is divided into two or more parts for maintenance such as cleaning, sanitary inspection, and repair.
6. Install an alarm that sounds when the water in the Water storage tank rises above a certain level or falls below a certain level, with a receiver in the administration office.
7. When installing a Water storage tank under the ground outside a building or facility, it must be installed at least 5 meters away from harmful substances such as manure and garbage, and a device must be installed around the manhole to prevent others from accessing it. However, if it is impossible to install the Water storage tank at least 5 meters away from harmful substances, a barrier wall shall be installed around the Water storage tank.
8. Materials such as ladders, braces, and joints that come into contact with water should be made of corrosion-resistant materials such as fiber-reinforced plastic, stainless steel or concrete, and concrete Water storage tank should be finished with materials that do not affect water quality.
9. Install air pipes for air purification and overflow pipes for water level control in the Water storage tank, and fine wood screens made of rust-resistant materials to prevent insects and other contaminants from entering the pipes).
10. Install a drain valve on the inlet pipe of the water storage tank to prevent sewage or foreign substances from entering the water storage tank during the water supply process after a water outage.
11. Where water storage tanks are installed, use appropriate materials other than rock and asbestos to prevent secondary contamination from dust, etc.
12. The inside of the water storage tank must be at least 1 meter and 80 centimeters high. However, rooftop water storage tank is excluded.
13. The lid of the water storage tank should be locked, the entrance should be designed to prevent foreign objects from entering, and if the entrance is on the side, a safety footrest should be installed for easy inspection and maintenance.
14. A backflow prevention device shall be installed to prevent fire extinguishing water from flowing back into the water storage tank.

WATER TANK

"Aeismatic dry PAD" structure in the water storage tank PAD wet structure method

NEW

Water storage tank modular dry PAD

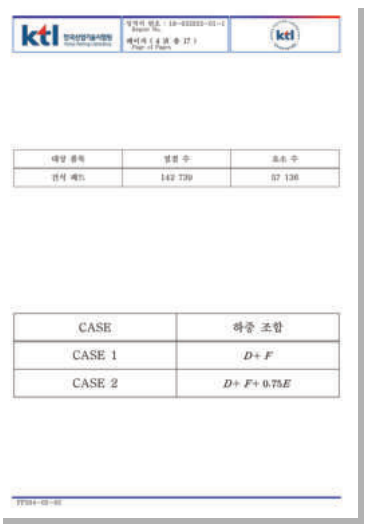


Patent No. 10-2006932, K-Mark

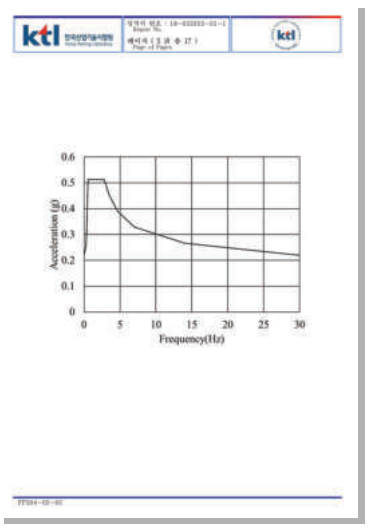
Dry PAD earthquake structure examination result

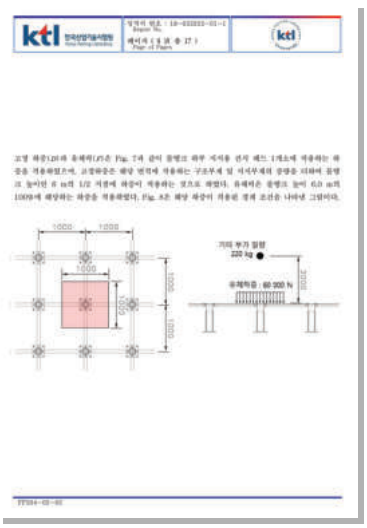
Reviewing the structural soundness of the dry PAD, the seismic response spectrum was calculated as shown in Fig. 5 based on the basic seismic velocity of 0.22g for the load combination seismic load using fixed load (D), seismic load (E), and fluid load (F). The load combinations were combined as shown in Table 2 to check the structural integrity of the dry PAD.

<Where to test loads and boundary conditions>



CASE	하중 조합
CASE 1	$D+F$
CASE 2	$D+F+0.75E$





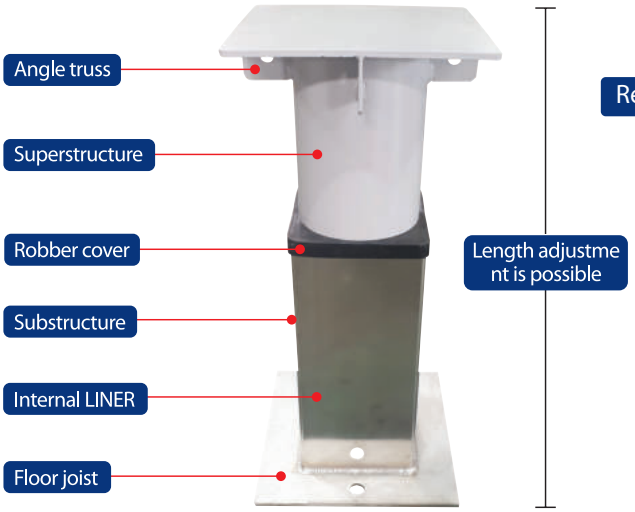
WATER TANK

"Aseismatic dry PAD" construction in the water storage tank PAD wet structure method

Aseismatic dry PAD

Structural analysis calculated using ANSYS Workbench 16.0, a finite element analysis program, to evaluate the structural safety of the Aseismatic Base frame dry PAD was found to be satisfactory K-Mark (PB12019-123)

Dry PAD structure diagram



Pressure test
10.5ton

Replacement test
9.5ton

KCL Korea Conformity Laboratories

Performance report No. TAK-2019-020665

Table comparing between Aseismatic dry PAD and wet PAD

	Dry PAD	Existing concrete (wet) PAD
Construction method	Installation of reinforced concrete-free + height-adjustable modular PAD	Formwork → Concrete Pour → Curing → Mortar Plaster → Curing → Epoxy Paint Finish
Horizontal method	Height-and level-adjustable Base frame	Difficulty maintaining a perfectly level and flat Base frame
Degree of Level and flat	Horizontalizable (allows for the best possible leveling)	Rust on the linerplate for leveling (PAD not level)
Installation time	Can be installed in a short time (1-2 days), even for 500 tons	30+ days of Base frame work required compared to construction schedule (based on 500 tons) Construction schedule is always uncertain
Constructability	Modular PAD Weight Reduction Installation vs. Concrete Pad	Increased load on the roof layer due to excessive weight of the Base frame
Convenience	Increased convenience by eliminating process interference between construction and facilities through standardized product production	Interference with the water tank process due to interference between construction and facility.

02.

Pressure Vessel Products

SUNG IL TECHONE

- HOT WATER HEATER
- HOT WATER STORAGE TANK
- PRESSURE VESSEL
- CLOSED TYPE EXPANSION TANK

PRESSURE VESSEL

Hot water heater (Hot water tank)

- All-in-one water heaters have the advantage of a smaller footprint, faster water heating times, and lower prices.
- There are no restrictions on the materials used and it can be installed in apartments, buildings, factories, offices and anywhere else that requires hot water.

Summary

A hot water heater (water heating tank) is a device that produces, stores, supplies, and circulates hot water with supply from a heat source such as steam or medium-hot water produced by a boiler, etc. to a heating coil (heat exchange part).

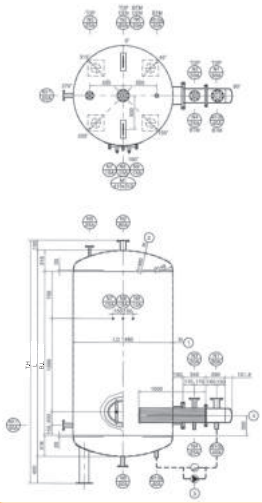
Main features

1. The low water volume ensures a smooth supply of hot water even during peak loads.
2. With no limitations on capacity, size, or material, it can be installed in any industry, anywhere that uses large volumes of hot water.
3. Fuel consumption can be reduced by using SPIRAL TUBE and forced convection by the self-circulating pump, shortening the heating time.
4. With regular cleaning and maintenance, it has a useful life equal to the life of the building.
5. You can increase the durability of your product by having it inspected by the Department of Energy.

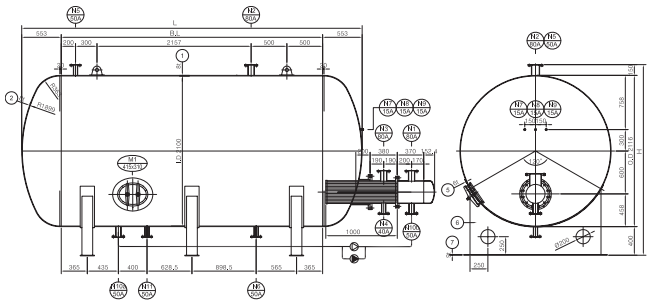
PRESSURE VESSEL

Hot water heater (Hot water tank)

Vertical type



Horizontal type



Nozzle Schedule

MARK	SERVICE
M1	MANHOLE
N1	WATER INLET
N2	WATER OUTLET
N3	HOT WATER INLET
N4	HOT WATER OUTLET
N5	SAFETY VALVE (Full Bore Valve) (KS B6216 dt = 38)
N6	DRAIN
N7	TEMP. GAUGE CONN.
N8	PRE. GAUGE CONN.
N9	TEMP. SENSOR CONN.
N10 a,b	CIRCULATION LINE
N11	WATER RETURN

Standard specification for vertical type

Water heating capacity (ℓ/hr)	Tank capacity (ℓ)	Size (mm)				Pipe Connection (A)						
		Internal diameter	Body Length	Length	Total Height	Steam	Condensation	Water supply	Water heating	Recirculation	Drainage	Safety valve
1000	730	800	1200	1570	1920	50	32	50	50	40	40	25
1500	1200	1000	1200	1650	2000	50	32	50	50	40	40	25
2000	1400	1000	1500	1950	2300	50	32	80	80	40	40	25
3000	2100	1200	1500	2040	2390	50	32	80	80	40	40	25
4000	2900	1300	1800	2390	2740	50	32	80	80	50	50	25
5000	3400	1400	1800	2440	2790	50	32	80	80	50	50	25
6000	4400	1400	2400	3040	3390	100	50	80	80	50	50	25
8000	5800	1600	2400	3120	3470	100	50	80	80	50	50	32
10000	7200	1900	2000	2840	3190	100	50	100	100	65	50	32
12500	9000	2000	2300	3180	3530	100	50	100	100	65	50	32
15000	11000	2200	2300	3260	3610	125	65	100	100	65	50	32
20000	14000	2300	2400	3400	3750	125	65	100	100	65	50	40
25000	17500	2450	3000	4060	4410	150	80	125	125	80	80	50
30000	21000	2650	3000	4140	4490	150	80	125	125	80	80	50

Standard specification for horizontal type

Water heating capacity (ℓ/hr)	Tank capacity (ℓ)	Size (mm)				Pipe Connection (A)						
		Internal diameter	Body Length	Length	Height	Steam	Condensation	Water supply	Water heating	Recirculation	Drainage	Safety valve
1000	730	800	1200	1570	1400	50	32	50	50	40	40	25
1500	1200	1000	1200	1650	1600	50	32	50	50	40	40	25
2000	1400	1000	1500	1950	1600	50	32	80	80	40	40	25
3000	2100	1200	1500	2040	1800	50	32	80	80	40	40	25
4000	2900	1300	1800	2390	1900	50	32	80	80	50	50	25
5000	3400	1400	1800	2440	2000	50	32	80	80	50	50	25
6000	4400	1400	2400	3040	2000	100	50	80	80	50	50	25
8000	5800	1600	2400	3120	2200	100	50	80	80	50	50	32
10000	7200	1900	2000	2840	2500	100	50	100	100	65	50	32
12500	9000	2000	2300	3180	2600	100	50	100	100	65	50	32
15000	11000	2200	2300	3260	2800	125	65	100	100	65	50	32
20000	14000	2300	2400	3400	2900	125	65	100	100	65	50	40
25000	17500	2450	3000	4060	3050	150	80	125	125	80	80	50
30000	21000	2650	3000	4140	3250	150	80	125	125	80	80	50

PRESSURE VESSEL

U-Bending water heater (water heating tank)

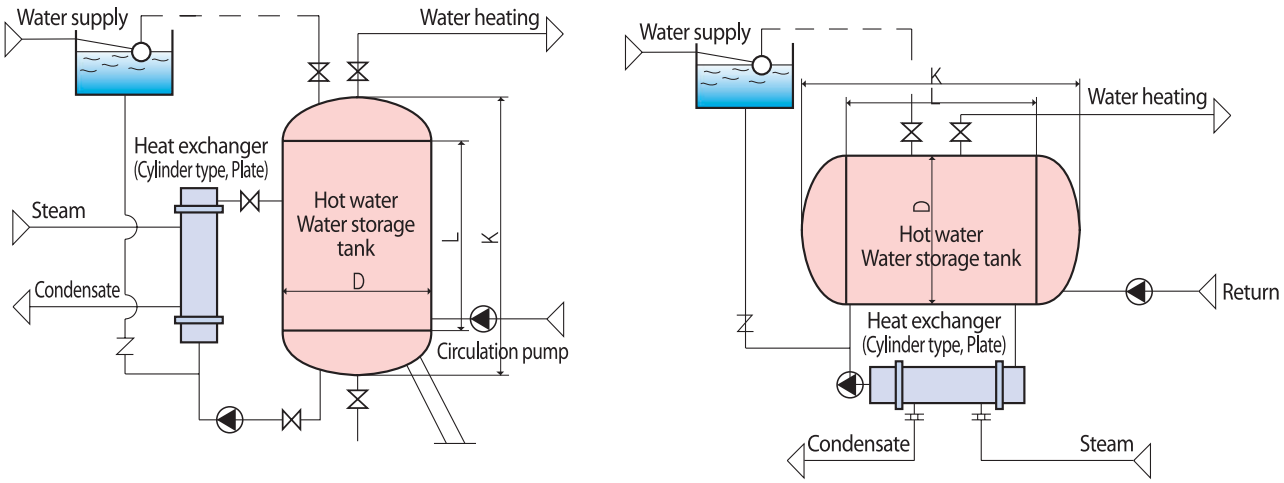
■ It is a structure that combines a heating tube with a fixed tube plate by bending it into a U-shape, so it can be easily separated, and it is convenient to use in a narrow installation site, as well as semi-permanently excellent in performance and efficiency.

PRESSURE VESSEL

Detachable water heater (hot water tank)

■ A detachable water heater is a good choice when the heat exchanger is installed separately from the hot water storage tank, making it easier to transport and install in the tank room.

System of detachable water heater



Hot water storage tank heat exchanger convection pump is the same as built-in heat exchanger.

Standard specification

Tank NO. SIHGD	Water heating capacity (ℓ/hr)	Tank capacity (ℓ)	Size (mm)			Detachable heat exchanger specification
			Internal diameter	Body Length	Length	
SIHGD- 8	800	580	800	900	1288	100A × 1640L
SIHGD- 10	1000	730	800	1200	1588	
SIHGD- 15	1500	1200	1000	1200	1666	
SIHGD- 20	2000	1400	1000	1500	1966	
SIHGD- 30	3000	2100	1200	1500	2062	150A × 1750L
SIHGD- 40	4000	2900	1300	1800	2400	
SIHGD- 50	5000	3400	1400	1800	2438	
SIHGD- 60	6000	4400	1400	2400	3038	200A × 1820L
SIHGD- 80	8000	5800	1600	2400	3116	
SIHGD-100	10000	7200	1900	2000	2844	
SIHGD-125	12500	9000	2000	2300	3184	250A × 2070L
SIHGD-150	15000	11000	2200	2300	3260	
SIHGD-200	20000	14000	2300	2700	3706	300A × 2160L
SIHGD-250	25000	17500	2450	3000	4064	
SIHGD-300	30000	21000	2650	3000	4142	

※ Above can be changed without prior notice.

PRESSURE VESSEL

Hot water storage tank

- The hot water storage tank utilizes hot water that is first heated by a hot water boiler and directly circulates it to fulfill the function of supplying and storing hot water at the same time.
- There is no restrictions on the materials used, and it can be installed in apartments, buildings, factories, offices, and anywhere else that requires hot water.

Standard specification for vertical type

Tank capacity (ℓ)	Size (mm)				Pipe fittings (A)					
	Internal diameter	Body Length	Length	Height	Circulation	Water supply	Water heating	Recirculation	Drainage	Safety valve
730	800	1200	1570	1920	32	50	50	40	40	25
1200	1000	1200	1650	2000	32	50	50	40	40	25
1400	1000	1500	1950	2300	32	80	80	40	40	25
2100	1200	1500	2040	2390	32	80	80	40	40	25
2900	1300	1800	2390	2740	32	80	80	50	50	25
3400	1400	1800	2440	2790	32	80	80	50	50	25
4400	1400	2400	3040	3390	50	80	80	50	50	25
5800	1600	2400	3120	3470	50	80	80	50	50	32
7200	1900	2000	2840	3190	50	100	100	65	50	32
9000	2000	2300	3180	3530	50	100	100	65	50	32
11000	2200	2300	3260	3610	65	100	100	65	50	32
14000	2300	2400	3400	3750	65	100	100	65	50	40
17500	2450	3000	4060	4410	80	125	125	80	80	50
21000	2650	3000	4140	4490	80	125	125	80	80	50

Standard specification for horizontal type

Tank capacity (ℓ)	Size (mm)				Pipe fittings (A)						
	Internal diameter	Body Length	Length	Height	Steam	Circulation	Water supply	Water heating	Recirculation	Drainage	Safety valve
730	800	1200	1570	1400	50	32	50	50	40	40	25
1200	1000	1200	1650	1600	50	32	50	50	40	40	25
1400	1000	1500	1950	1600	50	32	80	80	40	40	25
2100	1200	1500	2040	1800	50	32	80	80	40	40	25
2900	1300	1800	2390	1900	50	32	80	80	50	50	25
3400	1400	1800	2440	2000	50	32	80	80	50	50	25
4400	1400	2400	3040	2000	100	50	80	80	50	50	25
5800	1600	2400	3120	2200	100	50	80	80	50	50	32
7200	1900	2000	2840	2500	100	50	100	100	65	50	32
9000	2000	2300	3180	2600	100	50	100	100	65	50	32
11000	2200	2300	3260	2800	125	65	100	100	65	50	32
14000	2300	2400	3400	2900	125	65	100	100	65	50	40
17500	2450	3000	4060	3050	150	80	125	125	80	80	50
21000	2650	3000	4140	3250	150	80	125	125	80	80	50

PRESSURE VESSEL

HEADER

■ Collect valves in one place for the purpose of diverting and collecting fluids for easy maneuverability.



Distance between the valves

VAPOR HEADER (GLOBE VALVE)

Application	Valve diameter	20A	25A	32A	40A	50A	65A	80A	100A	125A	150A	200A	250A
Steam, hot water with a pipe vapor pressure of 1 kg/m² or more and cold water pipes HEADER less than 7kg/m²	20A	160											
	25A	190	200										
	32A	200	210	230									
	40A	200	210	230	230								
	50A	210	220	230	230	240							
	65A	240	250	260	260	270	300						
	80A	250	270	270	280	290	320	330					
	90A	250	280	290	290	300	320	340					
	100A	250	290	300	300	310	340	360	380				
	125A	300	310	320	320	330	360	380	400	420			
	150A	320	330	340	340	350	380	400	420	440	450		
	200A	370	380	390	390	400	430	440	470	490	510	550	
	250A	440	440	470	470	480	490	500	510	530	540	570	600

COLD·HOT WATER HEADER (BUTTERFLY VALVE)

Valve diameter	32A	40A	50A	65A	80A	100A	125A	150A	200A	250A	300A
32A	230										
40A	240	240									
50A	240	250	280								
65A	290	300	300	350							
80A	300	310	310	360	370						
90A	310	310	320	370	380						
100A	320	330	330	380	390	410					
125A	340	350	350	400	410	430	450				
150A	360	360	370	410	430	440	460	480			
200A	380	390	400	440	450	470	490	510	530		
250A	430	430	440	490	500	520	540	550	580	620	
300A	450	460	480	510	520	540	560	580	600	650	700

● S Around 150, P=Distance between valves, H=1300~1500

▶ Regarding the basic design of HEADER, please consult design team of our company

PRESSURE VESSEL

CLOSEL EXPASION TANK

Advantage of closed type Expansion tank

1. Corrosion at pipe is prevented.
2. Performance of air exhaust is excellent.
3. No limit on installation site
4. Operating temperature scope is fixed.
5. Sufficient operation performance is guaranteed.
6. Semi-permanent life and energy saving.

Bladder type Expansion tank

Model	Capacity (Liter)	Max use pressure (kg/cm²)	Junction (Ømm)	Diameter (mm)	Height (mm)
SEB 200	200	10	32	540	1250
SEB 300	300	10	32	650	1270
SEB 400	400	10	32	740	1300
SEB 500	500	10	32	775	1420
SEB 600	600	10	40	730	1795
SEB 750	750	10	50	800	1960
SEB 800	800	10	50	830	2000
SEB 900	900	10	50	770	2295
SEB 1000	1000	10	50	800	2410
SEB 1200	1200	10	50	870	2440
SEB 1400	1400	10	50	940	2460
SEB 1600	1600	10	80	1010	2610
SEB 1800	1800	10	80	1060	2650
SEB 2000	2000	10	80	1100	2750
SEB 2500	2500	10	80	1230	2785
SEB 2800	2800	10	80	1220	3070
SEB 3000	3000	10	80	1250	3100
SEB 3500	3500	10	80	1350	3165
SEB 3800	3800	10	80	1400	3210
SEB 4000	4000	10	80	1430	3230
SEB 4500	4500	10	80	1510	3320
SEB 4800	4800	10	80	1550	3375
SEB 5000	5000	10	80	1550	3420
SEB 5200	5200	10	80	1620	3430

- **Housing material :** SS 400
  Option : Stainless steel(STE 304, 316, 316L)
- **Outside painting :** Minium 2 times+KSM 5701
- If blender is damaged, replacement is possible.
- **Capacity :** 200~5,200LTR
- **Max use temperature :** 120° C
- **Max use pressure :** 10.0kg/cm²
  Option : 15.0kg/Cm2

PRESSURE VESSEL

SELECTION OF EXPANSION TANK

Expansion tank selection procedures

① Total number of piping systems(ℓ) · · · · · · · · · · · · · · · · V

② Lowest temperature of piping system(℃) · · · · · · · · · · · · · t_i

③ Highest temperature of piping system(℃) · · · · · · · · · · · · · t_f

④ Lowest operating pressure of piping system (kg/㎠G) · · · · · · P_i

$P_i = P_H + P_P$ · · · · · · · · · · · · · · · · · · (Formula 1)

P_H : Hydrostatic head pressure as a function of vertical height from the expansion tank to the top of the pipe.

P_P : Air vent exhaust pressure or proper pressurization to prevent evaporation (see Table 2)

⑤ Highest operating pressure of expansion tank (kg/㎠G) · · · · · P_f

$P_f = P_i + \Delta P_{max}$ · · · · · · · · · · · · · · · · (Formula 2)

ΔP_{max} : Allowable maximum pressure increase in the expansion tank (kg/㎠G) Calculate the following (Eq. 3) for each pipe section and adopt the minimum of them as Pmax.

※ In case of KX TYPE, Pmax is adjust to within 0.1~0.3kg/㎠G

$\Delta P_{max} = P_E - (A+B+C+D)$ · · · · · · · · · (Formula 3)

Here P_E : the internal pressure of the appliance and piping or the set pressure of the safety valve

A : Margin for safety valve set pressure (=PEXO.1)

B : Hydrostatic head pressure on appliances and piping

C : Proper pressure (=PP) to prevent evaporation or venting

D : The pressure of the circulation pump on each section of pipe

⑥ Find the volume of expansion (V_E). (Sections 1, 2, and 3 and Table 1)

$V_E = V \times (V_f - V_i)$ · · · · · · · · · · · · · · · (Formula 4)

Here, Specific volume of water at Vi, Vi: t, ti (Refer to table 1)

⑦ Find the effective capacity coefficient (A, F: Acceptance factor). (Sections 4 and 5)

$$A.F = 1 - \frac{1.033 + P_i}{1.033 + P_f}$$ · · · · · · · · · · · · · · (Formula 5)

※ For KX TYPE, A.F =0.85 regardless of pressure condition.

⑧ Calculate expansion tank volume (V_f)

$V_f = V_E/A.F$ · · · · · · · · · · · · · · · · · · (Formula 6)

⑨ Select the model number by reviewing pressure conditions, tank capacity, etc.
(However, the effective expansion volume of the selected tank must be greater than the expansion volume V_E in paragraph 6)

Specific volume of water depending on temperature

Temperature (℃)	Specific volume (ℓ/kg)	Temperature (℃)	Specific volume (ℓ/kg)
4	1.00000	80	1.02899
5	1.00001	85	1.03237
10	1.00027	90	1.03590
15	1.00087	95	1.03959
20	1.00177	100	1.04343
25	1.00294	110	1.05150
30	1.00435	120	1.06010
35	1.00598	130	1.06930
40	1.00782	140	1.07940
45	1.00985	150	1.09020
50	1.01207	160	1.10190
55	1.01448	170	1.00450
60	1.01705	180	1.12790
65	1.01979	190	1.14290
70	1.02270	200	1.15900
75	1.02576	220	1.19500

Proper pressurization to prevent flashing

Highest temperature of system (℃)	Proper pressurization (kg/㎠G)	Highest temperature of system (℃)	Proper pressurization (kg/㎠G)
100 이하	0.3*	140	3.6
105	0.6	145	4.3
110	0.9	150	5.0
115	1.2	160	6.7
120	1.6	170	8.7
125	2.0	180	11.2
130	2.5	190	14.2
135	3.0	200	17.7

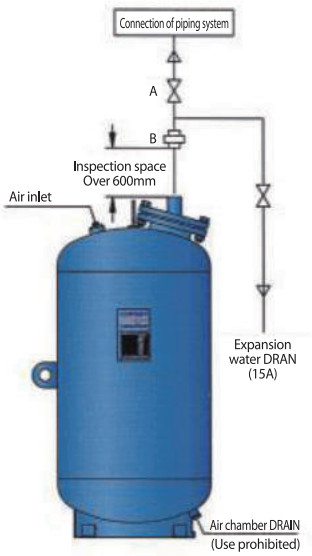
– Take a pressure about 8℃ above the saturation pressure to allow for a safety factor.

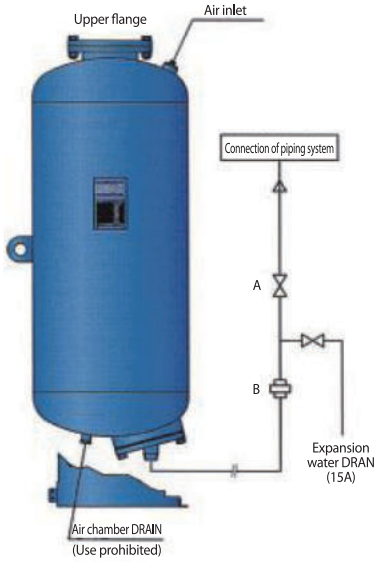
– * is the minimum pressure to exhaust the air vent

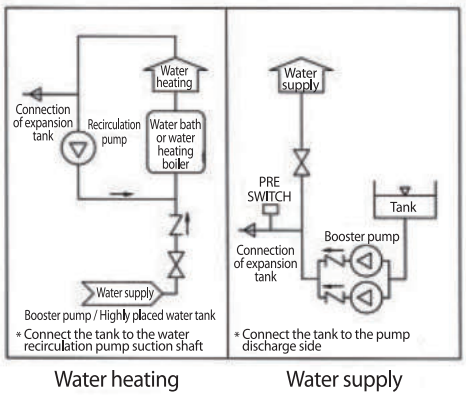
PRESSURE VESSEL

CLOSEL EXPASION TANK

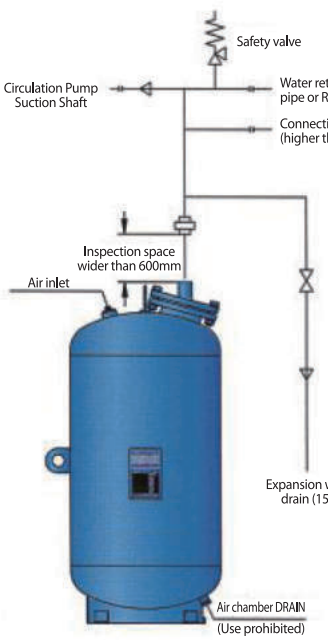
Expansion tank installation drawing (for water heating, water supply piping)

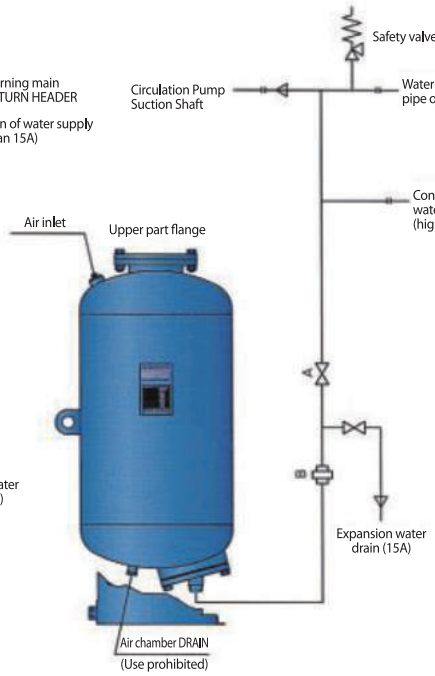


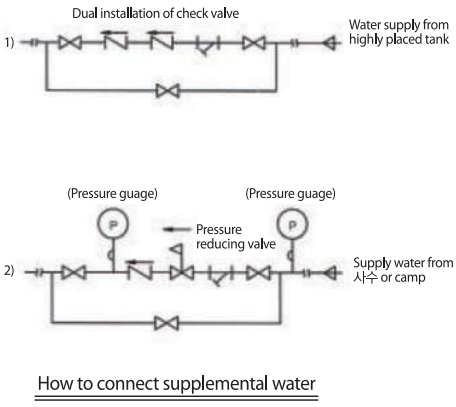




Expansion tank installation drawing (For cooling/heating piping







※ Make-up water piping must be installed separately from the expansion pipe or main pipe.

PRESSURE VESSEL

PRESSURE VESSEL

BUFFER TANK

AIR RECEIVER TANK

AIR HEADER

03.

Heat Exchanger Products

SUNG IL TECHONE

- HEAT EXCHANGER (SHELL &TUBE)
- HEAT EXCHANGER
  (PLATE HEAT EXCHANGER)
- COMPACT UNIT
- INSTANTANEOUS WATER HEATER

HEAT EXCHANGER

SHEEL & TUBE-Heat Exchange

Summary

It is a device that produces hot water or heating water up to 70° C by passing heat sources such as high-temperature steam, medium-temperature water, and low-temperature fluids through a spiral tube heating tube after welding a tube plate to the fuselage, and supplies it to the place of demand.

Major features

1. By using SPIRAL TUBE, the heat transfer area is maximized, allowing for a compact build.
2. PIRAL TUBE shape helps create turbulence, making it harder for contaminants to adhere, resulting in greater heat transfer.
3. Optimized design reduces heating time for low fuel consumption.
4. You can increase the durability of your product by having it inspected by Korea Energy Agency.

HEAT EXCHANGER

SHEEL & TUBE-Heat Exchange

■ Spiral tube heat exchangers utilize specially shaped heat transfer tubes to create a compact design that can be also used in small space for installation.

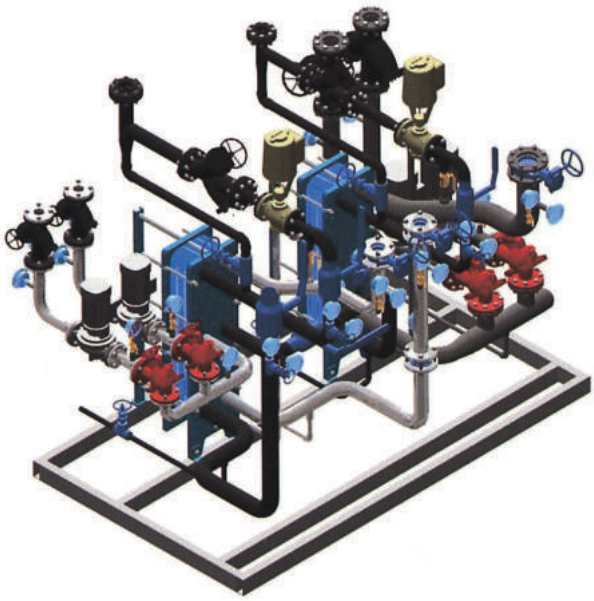
Standard specification of heat exchanger for steam

Capacity	Model	Specification	Tube length	Heat transfer width	Steam consumption volume	Hot water circulation volume	Piping connections		
		Outer diameter x Whole length					Steam		Hot water
Kcal/Hr	SIHES-1 Pass	mmØ×mm	mm	m^2	kg/Hr	1/min	Inlet	Condensation	Entrance/Exit
100,000	SIHES-1010SW-11	114.3×1450	1,000	0.8	180	166	50A	25A	50A
200,000	SIHES-1507SW-11	165.2×1220	700	1.26	360	332	80A	40A	80A
300,000	SIHES-2007SW-11	216.3×1300	700	2.37	540	498	80A	40A	100A
400,000	SIHES-2010SW-11	216.3×1600	1,000	3.39	720	665	100A	50A	100A
500,000	SIHES-2507SW-11	267.4×1470	700	3.63	900	833	100A	50A	125A
600,000	SIHES-2507SW-11	267.4×1470	700	3.63	1080	1000	100A	50A	125A
700,000	SIHES-2510SW-11	267.4×1770	1,000	5.19	1260	1166	125A	65A	125A
800,000	SIHES-2510SW-11	267.4×1770	1,000	5.19	1440	1333	125A	65A	150A
900,000	SIHES-2510SW-11	267.4×1770	1,000	6.85	1740	1529	125A	65A	150A
1,000,000	SIHES-3010SW-11	318.5×1860	1,000	7.18	1800	1660	125A	65A	150A
1,200,000	SIHES-3010SW-11	318.5×1860	1,000	9.13	2320	2039	125A	65A	200A
1,500,000	SIHES-3510SW-11	355.6×1960	1,000	9.77	2700	2500	150A	80A	200A
1,800,000	SIHES-4010SW-11	406.4×1980	1,000	13.70	3490	3039	150A	80A	200A
2,000,000	SIHES-4010SW-11	406.4×1980	1,000	14.12	3600	3333	200A	100A	200A
2,200,000	SIHES-4012SW-11	406.4×2200	1,200	16.74	4250	3739	200A	100A	200A
2,500,000	SIHES-4512SW-11	441.4×2200	1,200	19.02	4830	4249	200A	100A	250A
2,700,000	SIHES-4512SW-11	441.4×2200	1,200	20.55	5220	4589	200A	100A	250A
3,000,000	SIHES-5012SW-11	492.2×2200	1,200	22.83	5800	5099	200A	100A	300A

● Steam : 2kg/㎠ (132.88℃) ● Use water head pressure : 5kg/㎠ ● Etc. : SS400 ● Hot water for heating : 70~80℃(△t 10℃)
● Tube : CU15.88Ø×1.02t ● Heating : 50t Glass wool (G/W)
※ Above may change without prior notice.

HEAT EXCHANGER

Compact unit

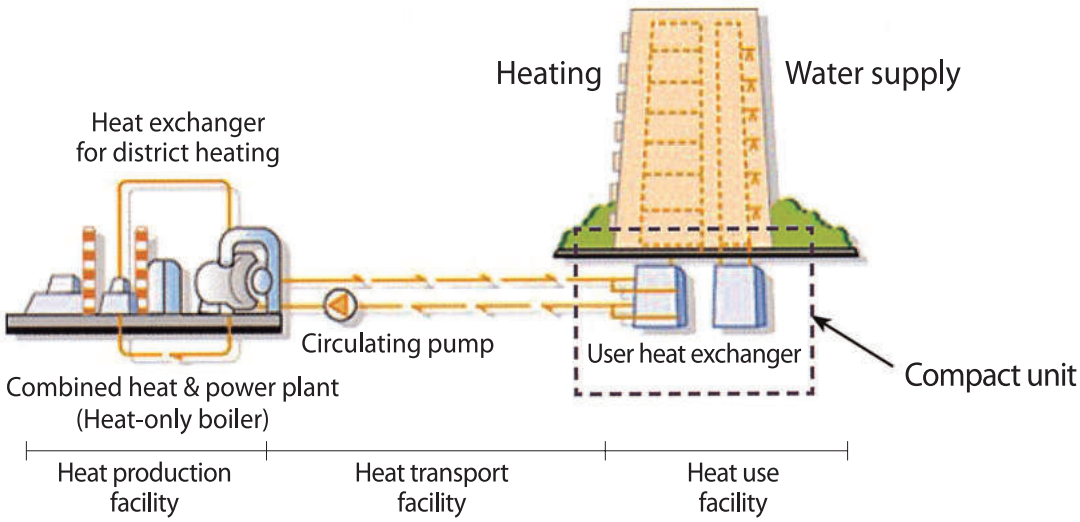


Background of introducing compact facility unit

Compact units were first introduced in Europe to improve the quality and reduce the cost of equipment construction by prefabricating the mechanical room equipment in a specialized equipment manufacturing plant and delivering it to the site at the time of need under quality control procedures, and now account for the majority of district heating equipment.

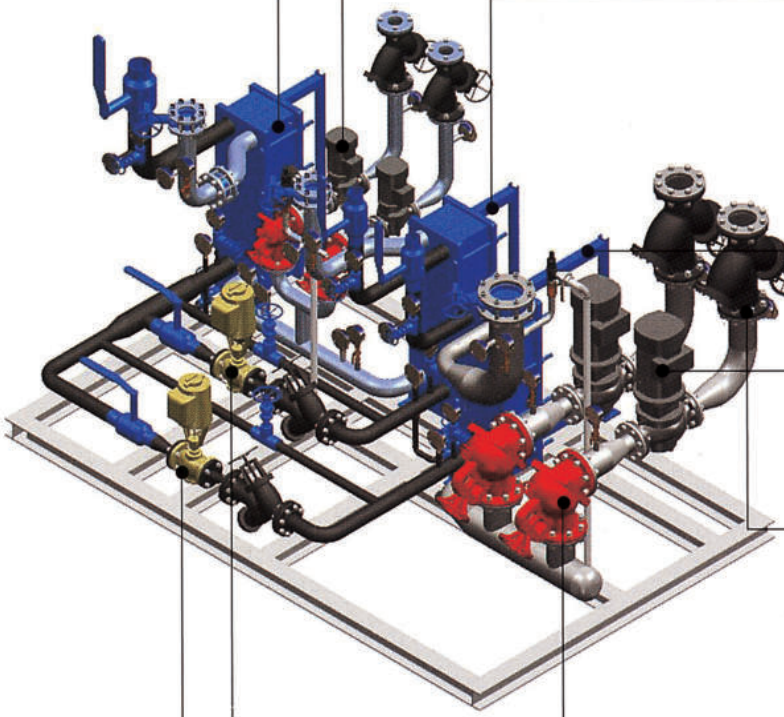
Summary of compact unit

Among the conventional collective energy supply facilities, it refers to energy supply equipment installed on a single steel frame in the factory, including circulating pump, heat exchangers for water supply and heating, automatic control equipment, and internal piping of the machine room, which would be installed in the final energy use facilities like machine room of apartments.



HEAT EXCHANGER

Compact unit



Heat exchanger for pre-heating of supply water

Supply water circulation pump

Pump for circulation of secondary hot water heating elements

Heat exchanger for reheating supply water

Heat exchanger for heating

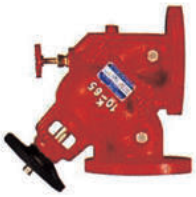
Heat exchanger for heating

Pump for circulation of secondary hot water heating elements

G.S valve

Valves that function as both shutoff and strainer

5-1 Check valve



① Hammerless Check Valve
② O.S & Y STOP valve
③ Balancing valve
④ BY-PASS function
⑤ Multidirectional capabilities f inlet connections

Supply water Temperature Control Valve

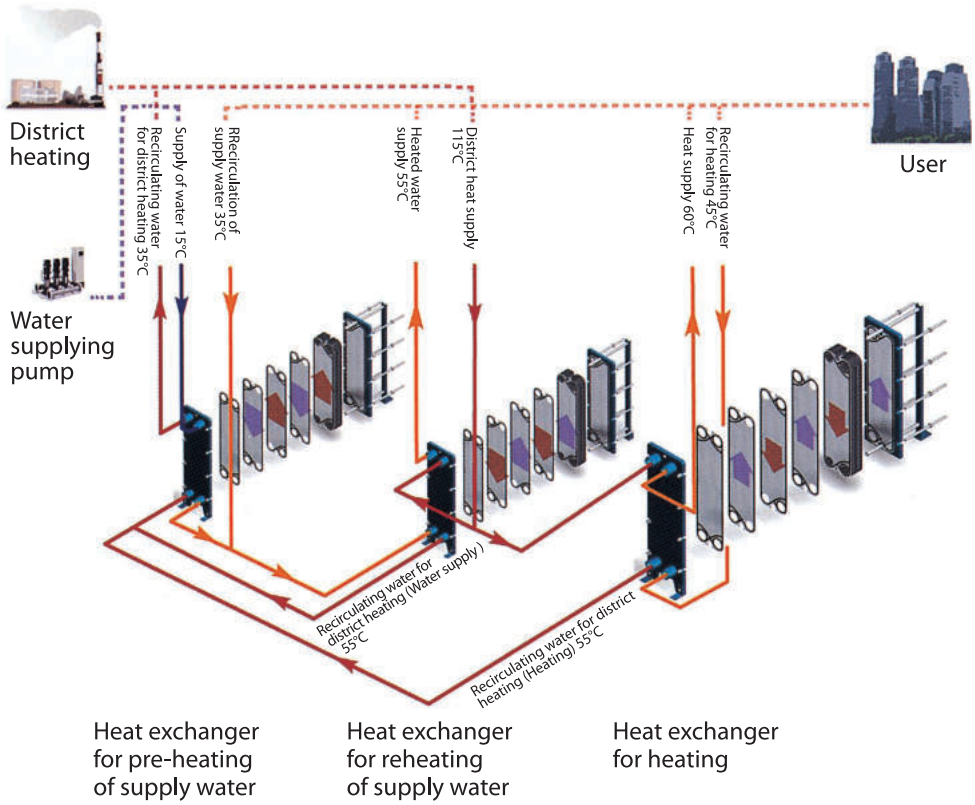
Control valve that controls the primary flow rate based on the secondary supply temperature in the heat exchanger for supply water

Heating temperature control valve

Control valve that controls the primary flow rate based on the secondary supply temperature in the heat exchanger for heating

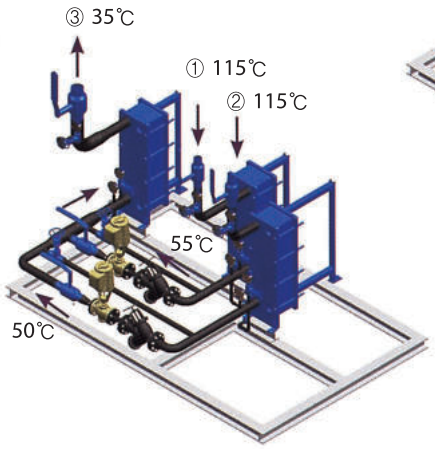
HEAT EXCHANGER

Compact unit



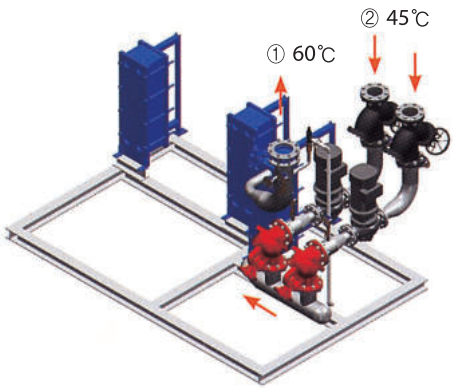
District heating pipe (1st part)

The district heating supply is provided at 115° C through 1,2 and undergoes primary heat exchange in the heating and heat exchanger for supply water reheating.
The primary heat exchanged fluid is transferred to heat exchanger for supply water preheating where it is secondarily heat exchanged and then transfers to the district heating agency via 3. The temperature of returned water is 35° C.



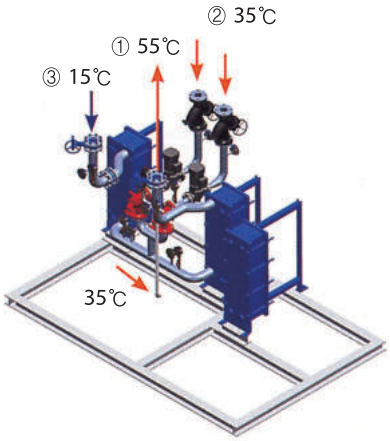
Heating (2ndary part)

The 45° C water returned through 2 is heat exchanged in the heat exchanger for heating and then delivered to the households at 60° C through 1.



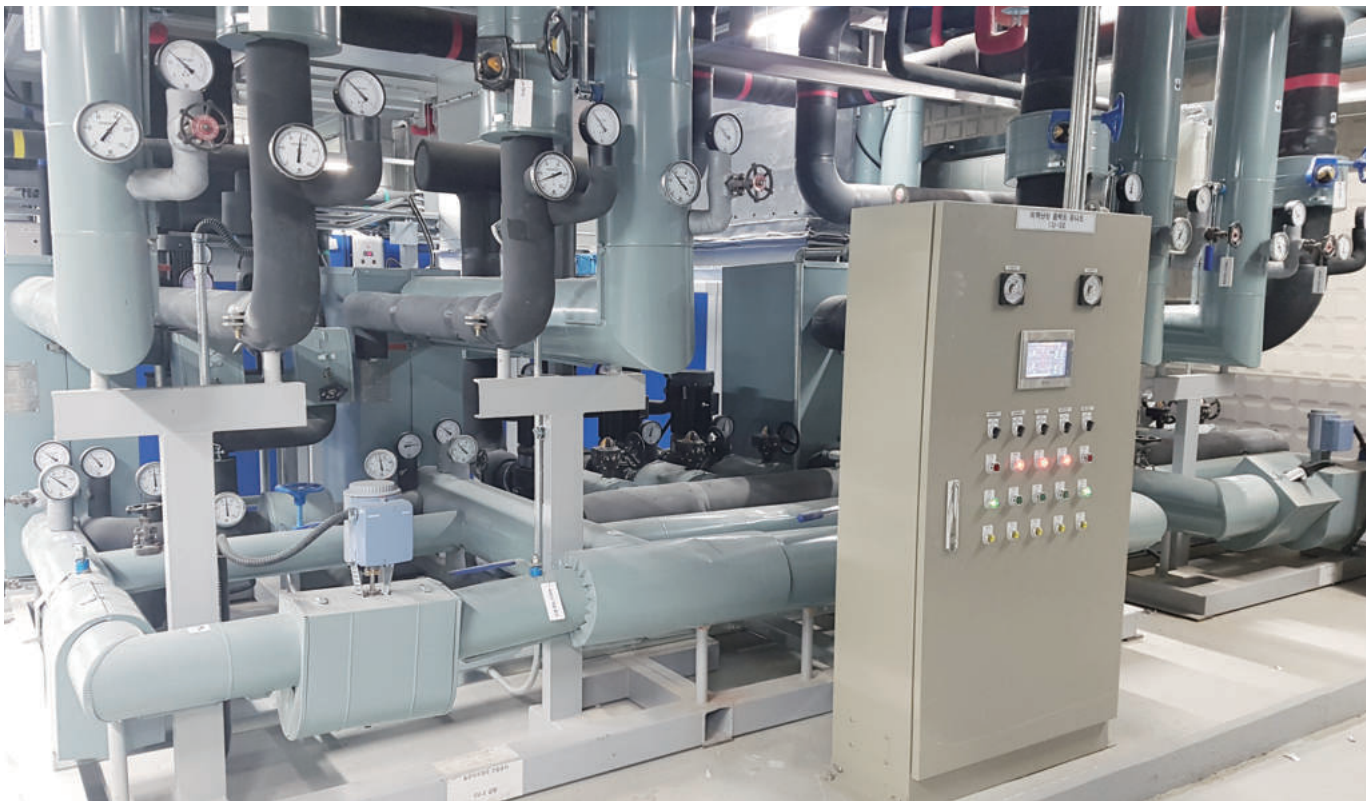
Water supply (2ndary part)

The 15°ΔC supply water (municipal water) supplied through 3 undergoes heat exchange in the heat exchanger for preheating of supply water.
It is combined with the 35°ΔC returned water supplied through 2 and undergoes secondary heat exchange in the heat exchanger for reheating of supply water before being raised to 55°ΔC through 1 and supplied to the households.



HEAT EXCHANGER

Compact unit



HEAT EXCHANGER

Plate Heat Exchanger

Heat exchanger is a device for transferring heat from one fluid (primary side) to another fluid (secondary side) without physical contact. In this case, the fluids do not mix, but only transfer heat.
The Plate heat exchanger is a cold-pressed heat transfer plate assembled by a frame (Head, Follow) and tie bolts, and the heat plate has a special corrugation to form turbulence and exerts high heat transfer.

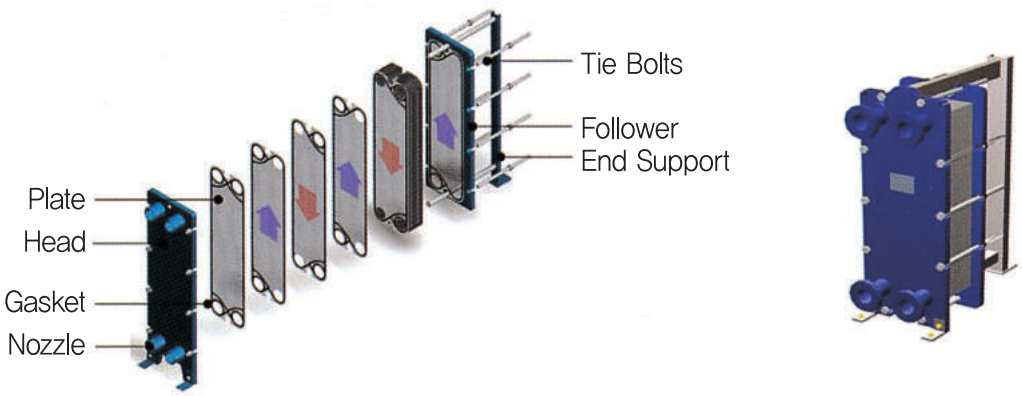
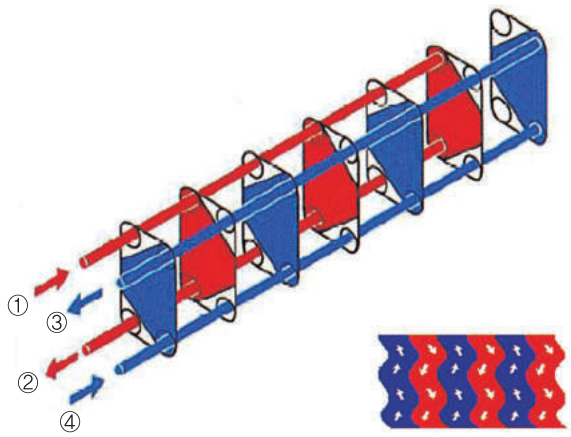


Plate heat exchangers assemble gaskets on the heat transfer plates, as shown in Figure 2, to prevent mixing between the fluids and leakage.

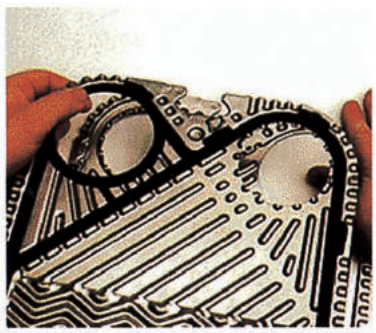
**For example

If the primary fluid at 115°ΔC supplied through nozzle 1 returns to the nozzle at 50°ΔC, then

the secondary fluid at 45°ΔC supplied through nozzle 4 returns to nozzle 3 at 60°ΔC, which means heat exchange without mixing of the fluids.



< Figure 1 >



< Figure 2 >

HEAT EXCHANGER

Waste heat recuperator

■ It refers to a device designed to increase thermal efficiency by inducing a certain temperature increase through heat exchange with municipal water for high-temperature wastewater left after use in saunas, factories, buildings, etc.

■ Open and closed types can be selected depending on the contamination level of the wastewater.

■ SPIRAL TUBE was applied to maximize thermal efficiency.

■ Standard specification for open types

Capacity Kcal/Hr	Type		Waste Heat Recuperator Model	PASS Method	Installation specification for wastewater BOX			Pump Diameter
					Width W	Heignt H	Length L	
400,000	Round Type	41m²-4N	SIWHE-4530-4SA	4-PASS	700	750	4000	2 1/2″
500,000	Round Type	51m²-4N	SIWHE-5030-4SA	4-PASS	750	800	4000	2 1/2″
600,000	Round Type	67m²-4N	SIWHE-5530-4SA	4-PASS	800	850	4000	2 1/2″

※Above can change without prior notice.

■ Standard specification of closed type

CAPACITY M3/HR	QUANTITY-OF HEAT KCAL/HR	MODEL SINHE/2PASS	Specification Outer Diameter×SHELL mmØ×mm	Heating surface area M2	Piping connections			
					Wastewater		Clean water	
					Entrance	Exit	Entrance	Exit
5	75,000	SINHE-2540-WW	250 × 4,000	6.3	40A	40A	40A	40A
10	150,000	SINHE-3040-WW	300 × 4,000	11.1	50A	50A	50A	50A
15	225,000	SINHE-3035-WW	300 × 3,500	16.1	65A	65A	65A	65A
20	300,000	SINHE-3535-WW	350 × 3,500	21.4	80A	80A	80A	80A
25	375,000	SINHE-4035-WW	400 × 3,500	26.8	100A	100A	100A	100A
30	450,000	SINHE-4035-WW	400 × 3,500	30.2	100A	100A	100A	100A
35	525,000	SINHE-4535-WW	450 × 3,500	35.3	100A	100A	100A	100A
40	600,000	SINHE-4535-WW	450 × 3,500	40.1	125A	125A	125A	125A
45	675,000	SINHE-4535-WW	450 × 3,500	45.2	125A	125A	125A	125A
50	750,000	SINHE-4535-WW	450 × 3,500	47.3	125A	125A	125A	125A
60	900,000	SINHE-5035-WW	500 × 3,500	56.3	150A	150A	150A	150A
70	1,050,000	SINHE-5035-WW	500 × 3,500	65.6	150A	150A	150A	150A
80	1,200,000	SINHE-5535-WW	550 × 3,500	75.3	150A	150A	150A	150A
90	1,350,000	SINHE-6035-WW	600 × 3,500	84.4	200A	200A	200A	200A
100	1,500,000	SINHE-6035-WW	600 × 3,500	93.8	200A	200A	200A	200A

● **Design conditions :** Peak operating pressure 10 Kg/cm2 , Wastewater temperature 35-15°C Return temperature 12-32°C ※Above can change without prior notice.

● **Material used for TUBE :** (C1220T, STS304TP, STS316TP) TUBE ● Products except for standard specification are manufactured and supplied via custom order.

04.

Industrial Tank Products

SUNG IL TECHONE

- INDUSTRIAL TANK
- FILTER TANK
- OIL STORAGE TANK
- FOOD TANK

INDUSTRIAL TANK

PLANT FACILITY TANK

HEAVY CALCIUM CARBONATE TANK & PIPING LINE
50 UNITS INCLUDING 500 TON

INDUSTRIAL TANK

PLANT FACILITY TANK

BIOCIDE STORAEGE TANK

MILL DISCHAGE TANK

PAC TANK

NaOH TANK

INDUSTRIAL TANK

PLANT FACILITY TANK

DRINK WATER SUPPLY TANK

LUBE OIL TANK

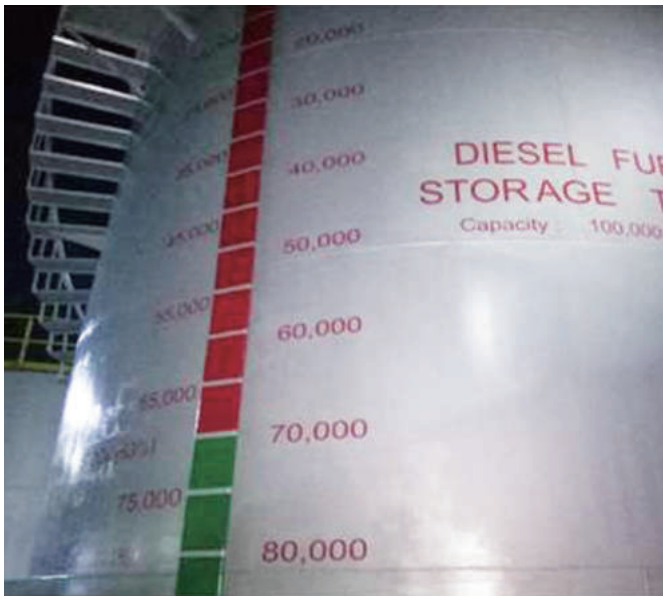
PCW TANK

H_2S0_4 TANK

INDUSTRIAL TANK

PLANT FACILITY TANK

CONENSATE WATER TANK



OIL TANK

WASTE WATER TANK

FILTER TANK

INDUSTRIAL TANK

OIL STORAGE TANK

INSIDE STORAGE TANK

OUTSIDE STORAGE TANK

BASEMENT STORAGE TANK

SELF-FUELING STATIONS

INDUSTRIAL TANK

FOOD TANK

MAJOR TECHNOLOGY CERTIFICATION

SUNGIL TECH ONE CO.,LTD has quality / environment / safety & health certification and excellent procurement product certification related to tank-related technology and development.

Excellent product designation certificate (PE composite stainless steel plate water tank)

Prospective company to enter the overseas procurement market (G-PASS enterprise) designation certificate

Environment management system certificate

Quality management system certificate

ISO 45001 certificate

Machinery facility engineering enrollment certificate

Woman-owned company certificate

Technology innovation SME (Inno-Biz) certificate

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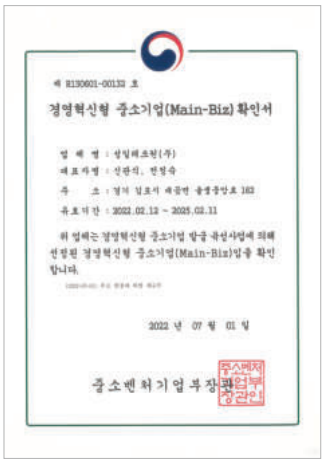


Management innovation SME (Main-Biz) certificate

Hygiene safety standard certificate

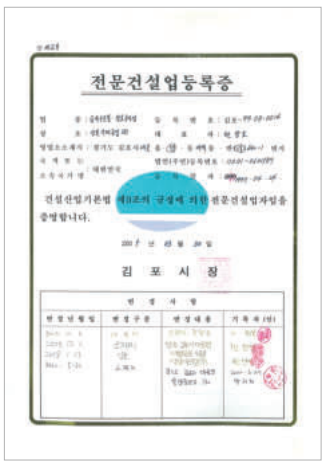
Competitive bidding eligibility certificate

Major technology certification

Direct production verification certificate

Excellent group standard product certificate

Excellent group standard product certificate



Professional construction business enrollment certificate

MAJOR TECHNOLOGY CERTIFICATION

SUNGIL TECH ONE CO.,LTD is a technology-oriented company with 23 patent certified products and 3 utility models.

MAJOR TECHNOLOGY CERTIFICATION

SUNGIL TECH ONE CO.,LTD is a technology-oriented company with 23 patent certified products and 3 utility models.

Patent registration No.	Patent name
No. 10-2591110	Anti-vortex device for an assembly water tank for firefighting water
No. 10-2591109	Earthquake-resistant prefabricated water tank with PE composite stainless steel sheet edge reinforcement structure
No. 10-2323541	Aseismatic Base frame dry PAD for water tanks
No.10-2278054	Reinforcement of Aseismatic water tanks
No.10-2216686	Aseismatic structure of water tank upper plate
No.10-2006931	PE composite stainless steel plate water tank top and bottom frame connection structure
No.10-2006932	Aseismatic Base frame dry PAD for water tank
No.10-1972106	Water storage tank water quality improvement system
No.10-1863864	Connection structure of PE composite stainless steel plate water tank
No.10-1863865	PE composite water tank
No.10-1837911	Smart type water tank with aseismatic function
No.10-1812719	Water tank leakage detection system
No.10-1778957	Water tank with improved storage and earthquake durability
No.10-1638968	Flexible double-embossed press type lining and how to build concrete Water storage tank with it
No.10-1483265	How to build a wall for a water tank using PEDS panels
No.10-1479274	How to make unit panel for water tank
No.10-1479275	Water tank manufactured using unit panel
No.10-1276872	Ceiling structure of water tank
No.10-1178247	How to Waterproof Concrete Water storage tank Using Polyurea Sheet Panels
No.10-1107619	PE sheet pouch structure of water tank
No.10-1107620	Corners reinforcement structure of modular water tank
No.10-1107622	Nozzle structure of modular water tank

Enterprise protecting precious **water** safely

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