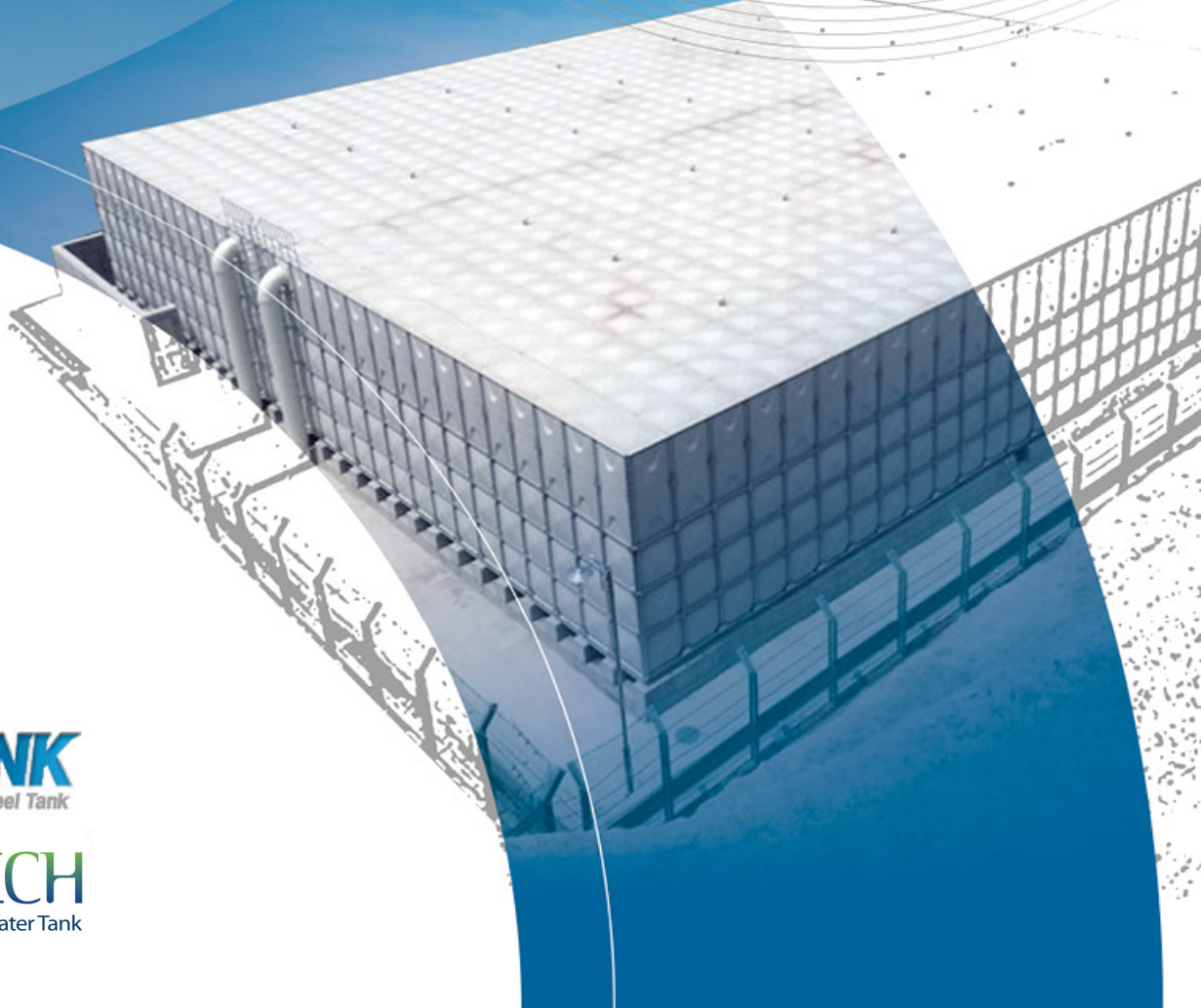




# GRP TANKS



**K-TANK**  
GRP & Steel Tank

**SNB TECH**  
GRP Sectional Panel Water Tank



GRP TANKS

## 01 SMC HOT PRESS



## 02 PANEL STORAGE



## 03 INSULATION PRESS



## 04 AUTO DRILLING MACHINE



## 05 MECHANICAL PRESS



## ■ Characteristics Feature of GRP-TANKS

### ○ Embo SMC Panel

Embo is GRP-TANKS signature surface technology which improves adhesiveness of SMC panels. Non-slip and Prevent insulation covering.

### ○ Easy Installation, Free Capacity design

Easy to install anywhere. And the capacity is free with various shape panel.

### ○ Excellent Hygiene and Durability

The GRP panel is made by HOT PRESS method. This prevents algae, germs growth and high hygiene. And Blocks external lighting completely, thereby preventing the bacteria inside of water tank.

### ○ Perfect Watertightness

Prevent leakage perfectly by using special sealing tape with excellent recovery.

### ○ Simple Assembling

GRP-TANKS panel can be easily assembled and relocated wherever you want. It can be shifted by limited space with pallet wrapping by exact size and quantity.

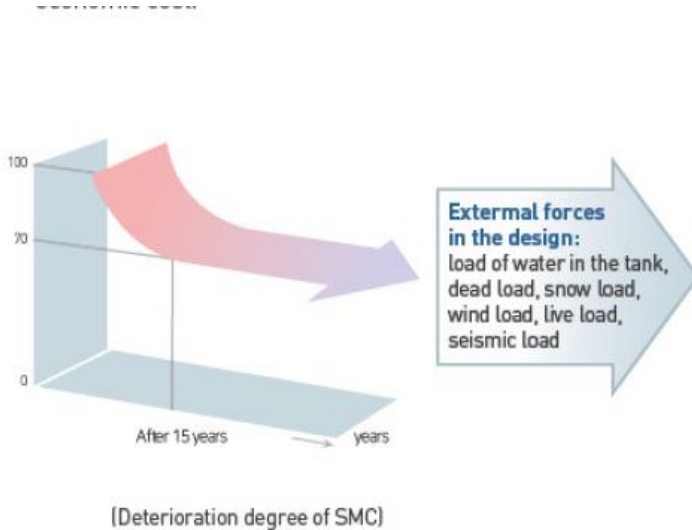
### ○ High Quality

We pursue the system superiority via sophisticated interpretation of hygiene, durability, rigorous design criteria, quality management, and reliable structure strength. The basis of structure interpretation ensures safety design for tolerance value. The finest safety rating, considering design-external comparison expected based on property after a long-term use of SMC materials for over 15 years (life is 40 years) is achieved through expertise of the GRP TANKS & SILOS TRADING L.L.C.

# Structural Analysis of TANKS

GRP-WATER TANKS are designed to be the safest panels through optimized design.

If the panels are reliable, the cost of reinforcement *can* be reduced and the best water tanks can be made at the most economic cost.



Item	Design Condition
Seismic load	Horizontal Seismic $K_h = 2/3$ Vertical $K_v = 1/3$ Designed bases on $K_h = 1/3G$ . Horizontal seismic load
Hydrostatic Pressure	Water Level(Height in Meters) x 0.1KGF/cm <sup>2</sup> [0.01MPa] Designed to stand against hydrostatic pressure enough. The max change of side wall is less than 1.0% of total height left in Water for 48 hours.
Snow Load	60 kgf/m <sup>2</sup> [ at the base of 30cm of snow depth] Designed to stand under 200kg/m <sup>2</sup> enough
Wind Load	Wind Load 255 kgf/m <sup>2</sup> [2.55 x 10 <sup>3</sup> Mpa] Designed to stand under max. 60m/sec even in case the tank dose not include water
Illumination	Illumination- Under 0.1%
Water Temperature	Under 30°C(normal) / Under 55°C(maximum) (Special making in case of thermal spring)

## Performance evaluation criteria of the panel

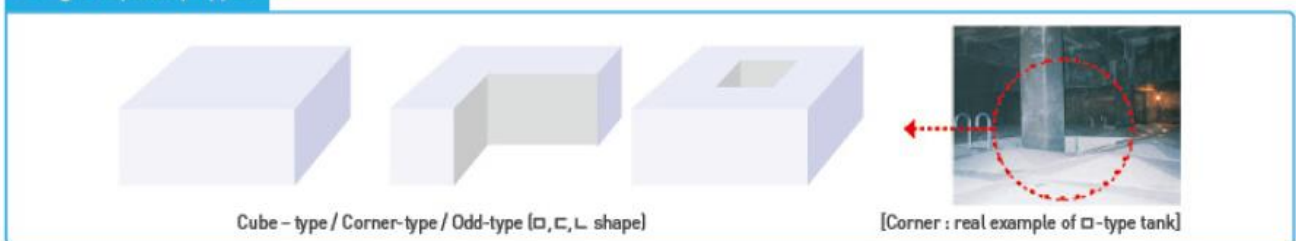
Item	Performance Criteria	GRP-TANKS	
<b>Mechanical strength</b>	1) Tensile strength	More than 60 Mpa	94Mpa
	2) Flexural strength	More than 80 Mpa	199Mpa
	3) Flexural modulus	More than 6000 Mpa	13727Mpa
	4) Barcol hardness	More than 30	52
	5) Absorption	Less than 1%	0.1
	6) Glassfiber content	More than 25%	31
	7) Panel gravity	1.8	1.8
	8) Impact strength	More than 80 Kj/m <sup>2</sup>	97 Kj/m <sup>2</sup>
	9) Light transmission	Less than 0.1%	0.00%
	10) Thermal conductivity	Less than 0.02 kcal/m-hr.°C	0.02 kcal/m-hr.°C
<b>Elution of toxic substances</b>	1) Heavy metals	Less than 0.1% ppm	Not detected
	2) Consumption of KMn	Less than 10 ppm	0.3 ppm
	3) pH	5.8-8.6	7.6
	4) Phenol	Less than 0.005 ppm	Not detected
	5) Odor & Taste	No defects	No defects

**Free capacity design** Using panels of various sizes, GRP-TANKS utilizes horizontal and vertical space at the maximum and those are suitable for an underground reserve tank of large capacity.

**Possible height to install tank:** 1.0mH-5.0mH

**Possible capacity to install tank :** 1rrr[Ton] - 5,000rrr[Ton]

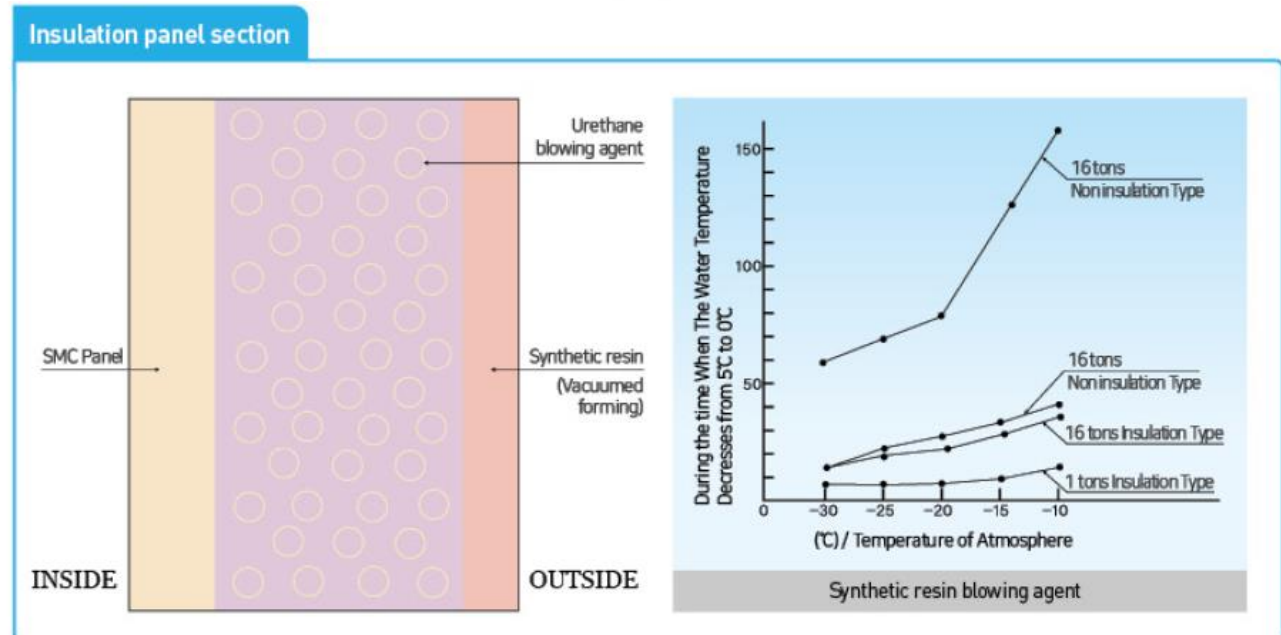
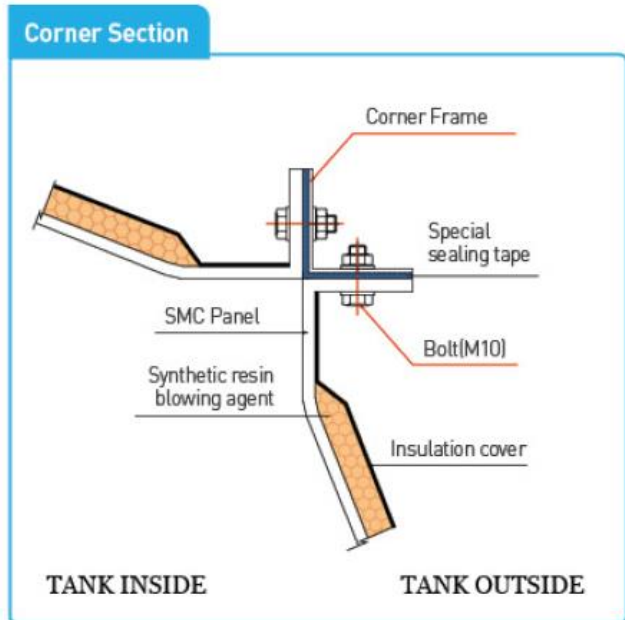
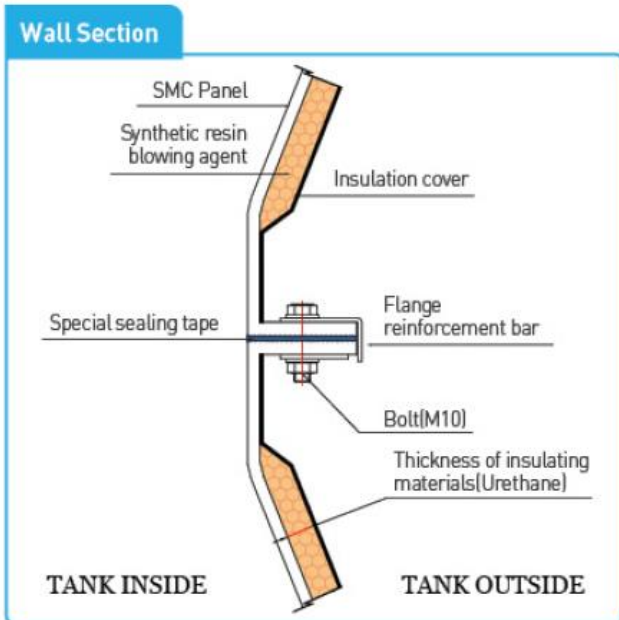
**Large capacity type** [The capacity exceeding 5000rrr can be installed by separate design]



# ■ EXCELLENT HEAT INSULATION

## GRP-TANKS is

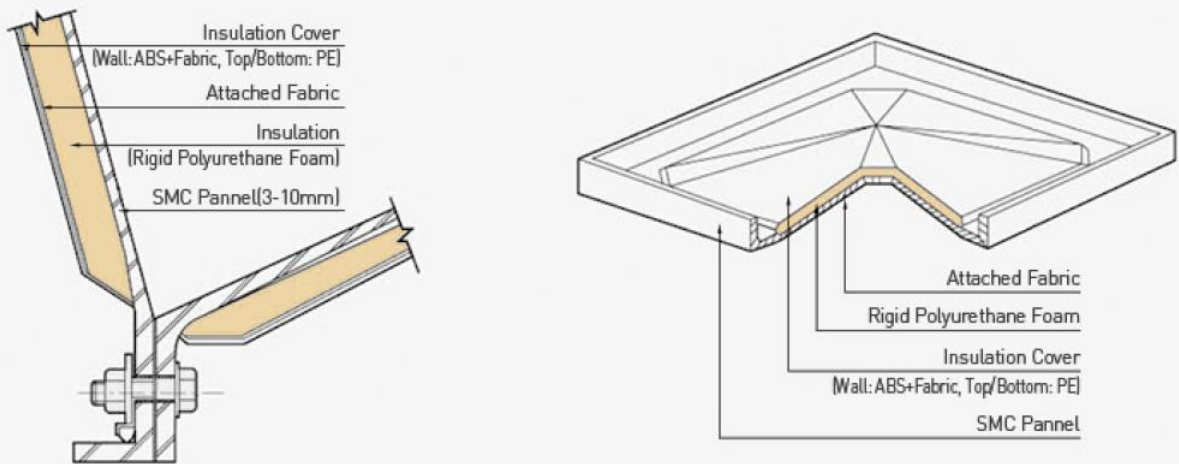
SMC insulation panels utilize urethane blowing agent that has excellent insulation materials for single-structure panels: the exterior is made of sandwiched-structure panels using vacuumed-molded covers with special synthetic resin for high insulation.



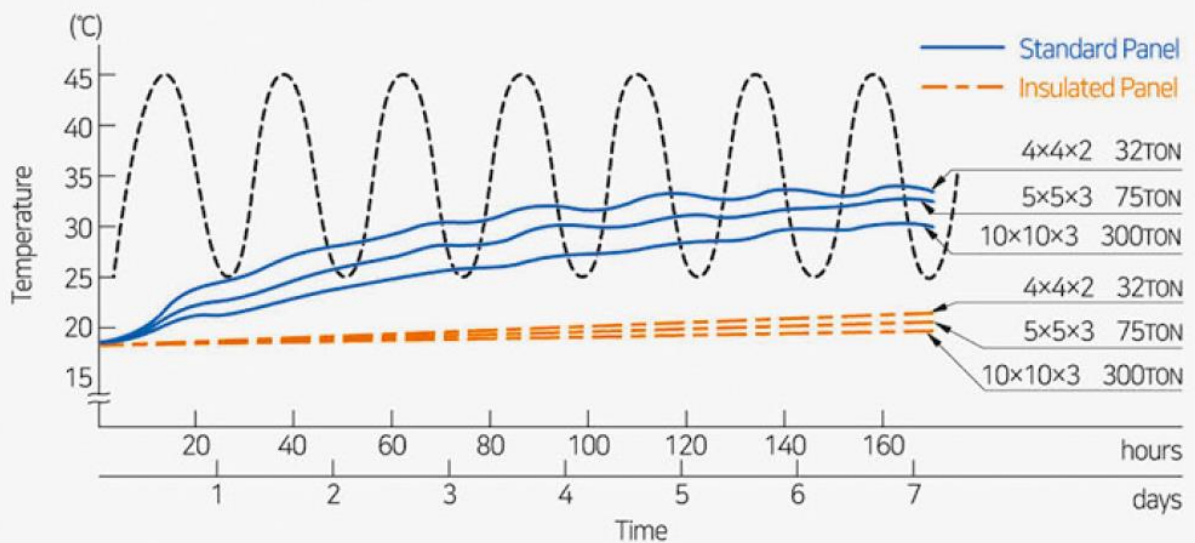
CAPACITY	CLASSIFICATION	TEMPERATURE OF ATMOSPHERE		
		-10	-20	-30
16 tons	Non insulation Type	35	20	13.5
	Insulation Type	164	81	58.5
1 tons	Non insulation Type	11	6	4
	Insulation Type	37.5	23	13.5

# ■ GRP TANKS PANEL

## TYPICAL CROSS SECTION



## EFFECT OF HEAT

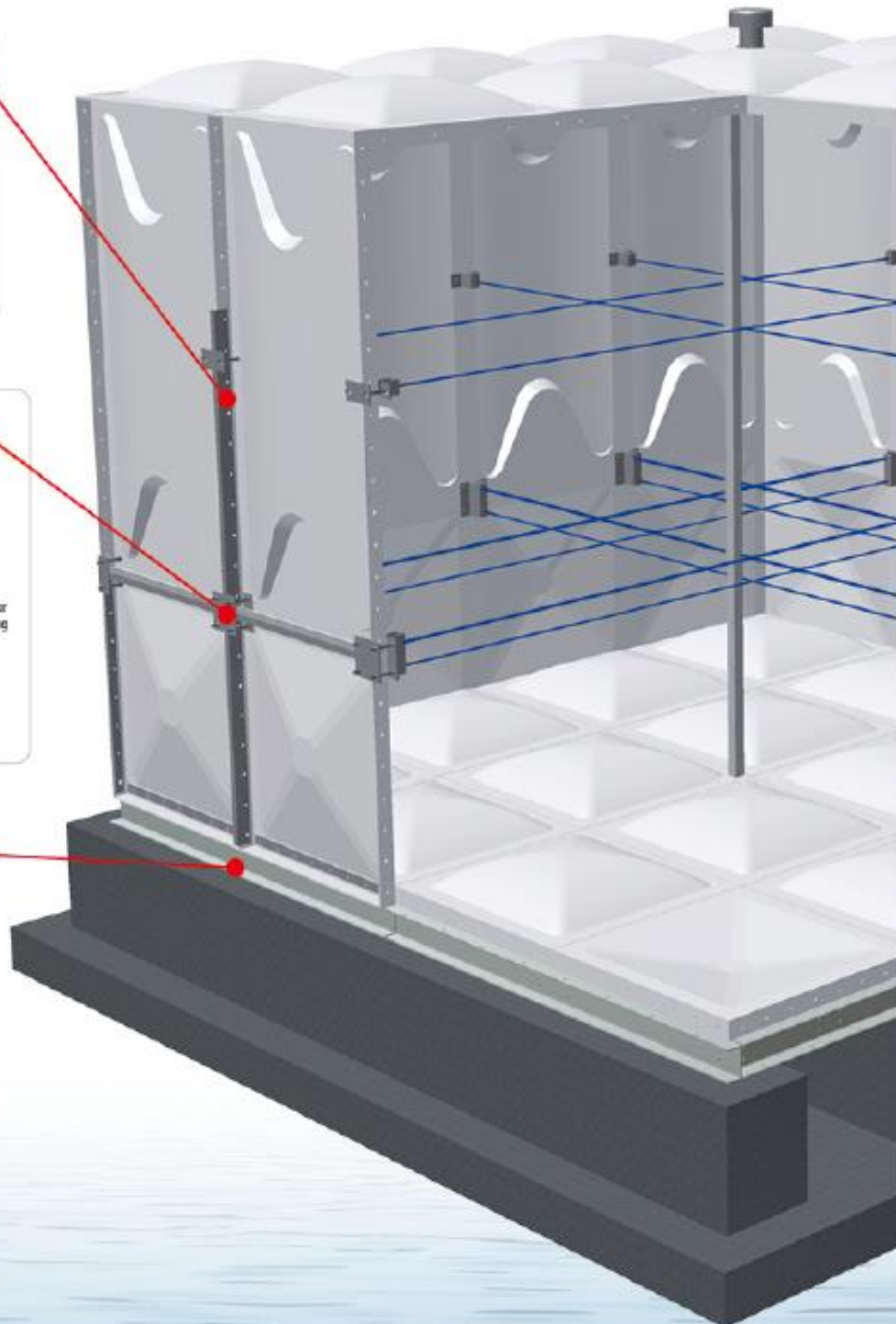
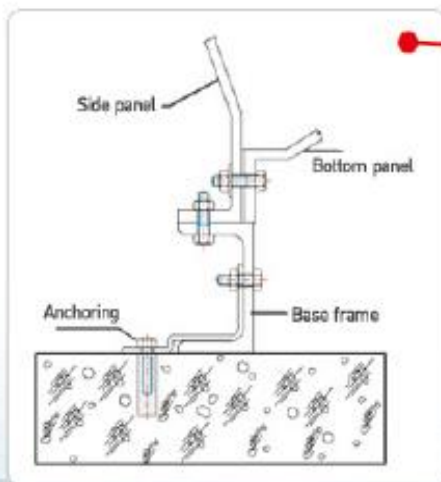
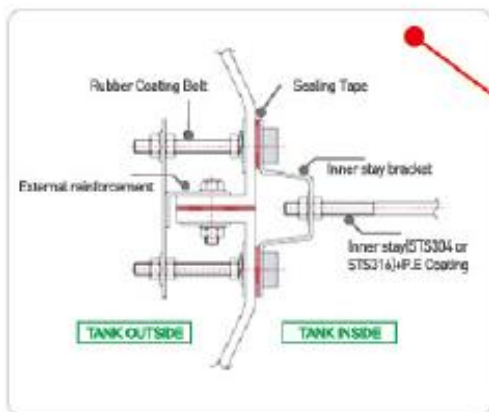
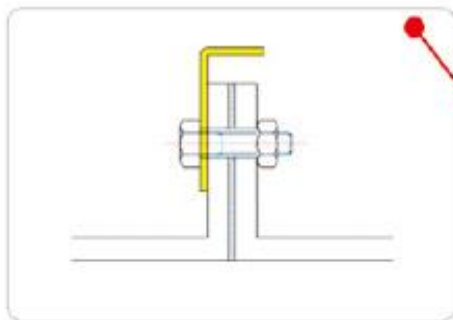


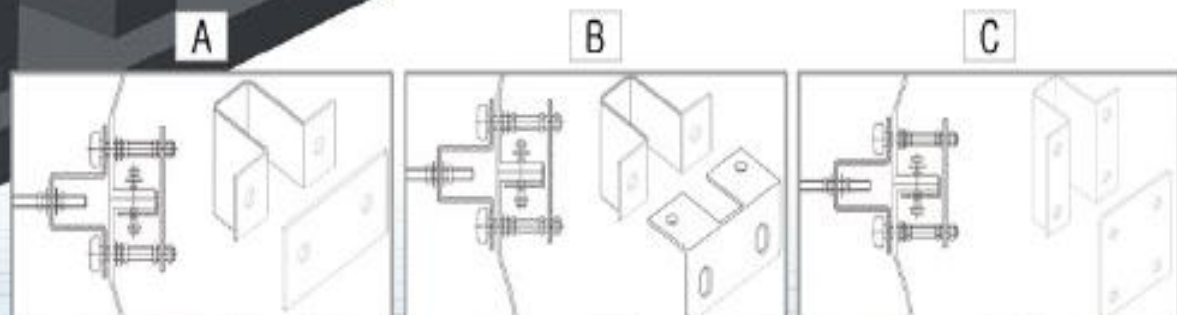
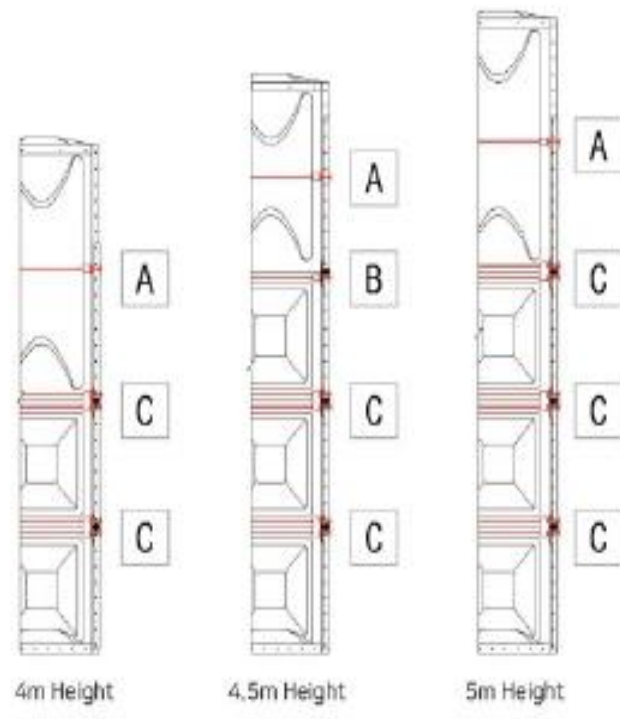
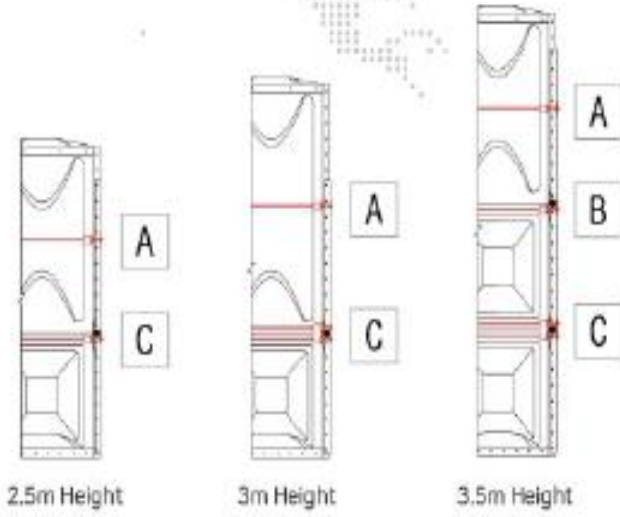
## THERMAL CONDUCTIVITY

	Thermal Conductivity Kcal/m.hr.°C(J/m.hr. °C)
STEEL	37.0(1.55X10)
SMC(Standard)	0.15(630)
SMC(Insulated)	0.02(84)

## ■ Internal reinforcement system provides the followings

- In the event that the space for installing a tank is narrow, a proper reinforcement system enhances the utility of the installation space.
- By applying a PE coating the the inner stay rust generation is minimized on the stainless steel part on the top part.





**Tie-rod: Single(A type)**  
 (Internal Bracket 1760S(STS) +  
 External Bracket 1780Z(HDG))

**Tie-rod: Single(B type)**  
 (Internal Bracket 1760S(STS) +  
 External Bracket 1712Q(HDG))

**Tie-rod: Double(C type)**  
 (Internal Bracket 17160S(STS) +  
 External Bracket 1416Z(HDG))

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