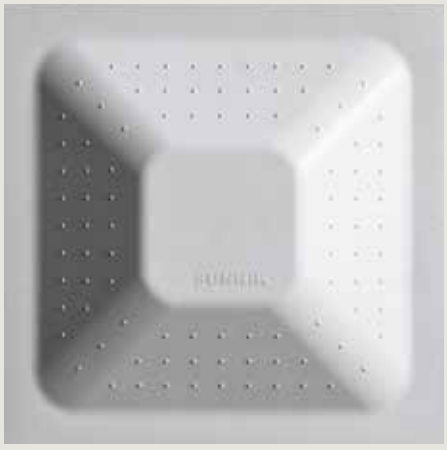
SUNNIK®

GRP SECTIONAL PANEL TANK

Robust, eco-friendly, modular and affordable liquid containment

for: potable water; commercial mining; food and factory production; air conditioning MAUs; fire protection; industrial liquids; rainwater harvesting; sea water and waste water storage






SUNNIK: RELIABLE WATER CONTAINMENT SINCE 1984

Since 1984, Sunnik has been providing best-in-class water containment systems to projects around the globe.

Through our progressive growth in the 1990s up to the present day, we're now one of the leading names in water containment worldwide, with our tanks in use in over 42 countries.

Our mission is to be the most reliable name in water storage construction industry. We strive to supply clean, economical and easy to install water tanks that will last and can withstand the elements.

Winners of the 2013 Malaysian Construction Industry Excellence Award, we've had the honour to work with some of the world's most prestigious construction projects. With accreditation from a growing number of statutory organizations, we strive to conform to international quality standards.

We're conscious about the environment and we continually seek ways to advance the future of water storage. Sunnik's GRP Sectional Panel Tanks are reliable, clean, flexible and economical, making them the ideal water storage solution for the 21st century.

Our design, development and construction processes use only the most cutting-edge techniques such as the application of Sheet Moulding Compound (SMC) with 1000 metric ton hot-pressed compression moulding and pre-fixed drilling procedures. These techniques combined with rigorous hydro pressure testing help ensure each panel is of the highest possible standard.

All this has helped us establish ourselves as one of the highest quality water storage providers on the market.

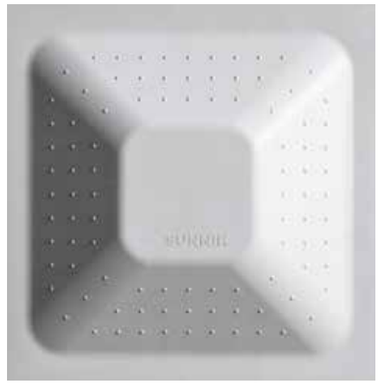
Because where there's quality water for the people, there's Sunnik.

SUNNIK'S EXEMPLARY TRACK RECORD


Chek Lap Kok International Airport, Hong Kong


Chakri Palace, Bangkok


Berekum, Ghana




Aspira Sport City Tower, Doha


Kuala Lumpur International Airport


Petronas Twin Tower, Kuala Lumpur


Burj Khalifa, Dubai

Constructions from the world's most hi-tech to the most basic benefit from our first-class water containment systems.

We've worked with some of the most prestigious projects, such as Burj Khalifa, the Petronas Twin Towers, Chep Lap Kok International Airport in Hong Kong and Kuala Lumpur International Airport. It's our priority to provide the best value, from our level of customer service to our products and construction techniques.

We pride ourselves on consistently meeting our milestones and continually raising the bar in water containment technology.


Cabanatuan, Philippines

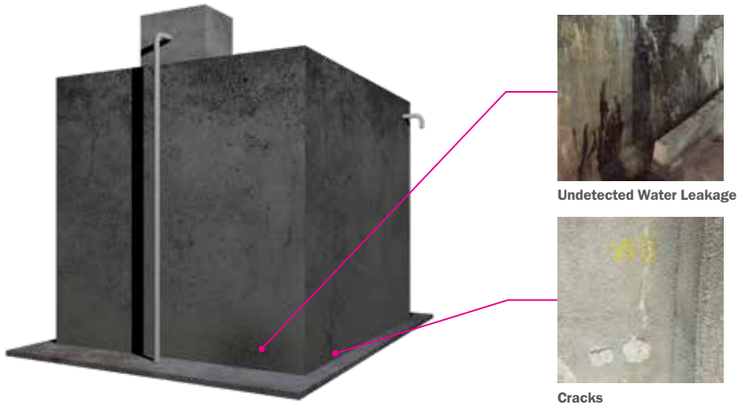
THE PROBLEM WITH CONVENTIONAL WATER STORAGE SYSTEMS

Concrete and steel tanks are prone to aging, fatigue and corrosion.

Concrete can crack due to erosion or natural disasters which can lead to tainted water and leakage. This is usually irreparable.

Similarly, mild steel tanks* are susceptible to rust, as well as being poorly suited to extreme temperatures. Steel tanks are also not well suited to extreme temperatures.

GRP Sectional Panel tanks offer much more reliable and lower cost alternative to conventional water tanks.



Undetected Water Leakage

Cracks

* Note: Sunnik also provides a range of lined steel tanks that are excellent solutions for projects requiring volumetric and durable tanks. Please feel free to contact us for more information and we'd be happy to discuss the best solution for your needs.

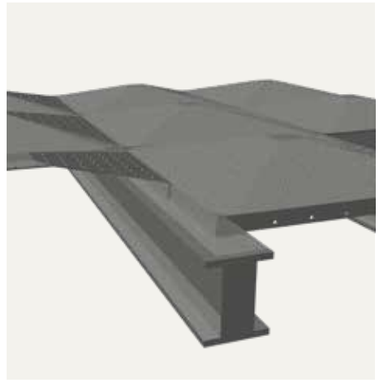
WHAT ARE GRP SECTIONAL PANEL LIQUID STORAGE TANKS

Glass Reinforced Polymer (GRP) is a strong glass fibre reinforced plastic composite. It's used in the aerospace, automotive, marine and construction industries because of its light-weight and durable qualities. The material has an impressive strength-to-weight ratio, an extremely long life-span and is easy to maintain.

GRP Sectional Panel tanks were created to address the problems of other water storage methods. They're strong, modular, low cost, recyclable, hygienic, resistant to weather and natural disasters, easy to maintain, fast to drain and well insulated. All this makes them the ideal solution for potable water and industrial liquid storage.

	BS EN 13280:2001		AWWA D121-12	
		Result		
Luminous Transmittance (Opacity)	0.2% (max)	0.0		
Resistance to Deformation	10mm (tax)	7mm		
Heat Distortion Temperature	70C (min)	90C (min)		
Flexural Strength			165 MPa	Passed
Shear Strength			93 MPa	Passed
Compressive Strength			295 MPa	Passed
Bearing Strength			200 MPa	Passed

RELIABLE AND DESIGNED FOR DURABILITY



NO MORE LEAKS

Sunnik's GRP sectional panel convex design distributes pressure towards the panel joints, which augments the sealing properties.

The joints themselves are sealed with a UV-resistant food-grade closed cell sealant which doesn't change with age and under extreme weather conditions.

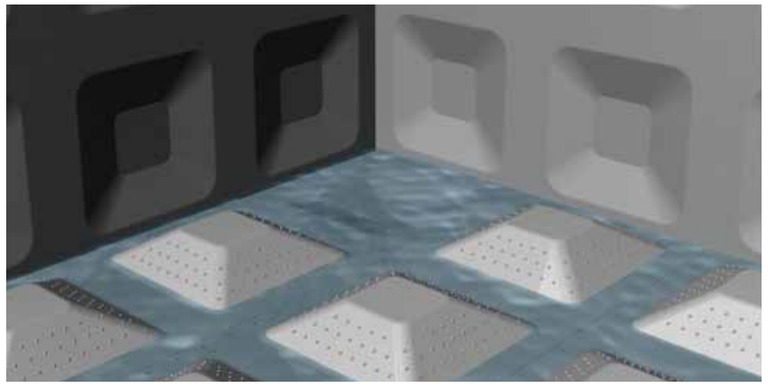
EROSION AND CORROSION FREE

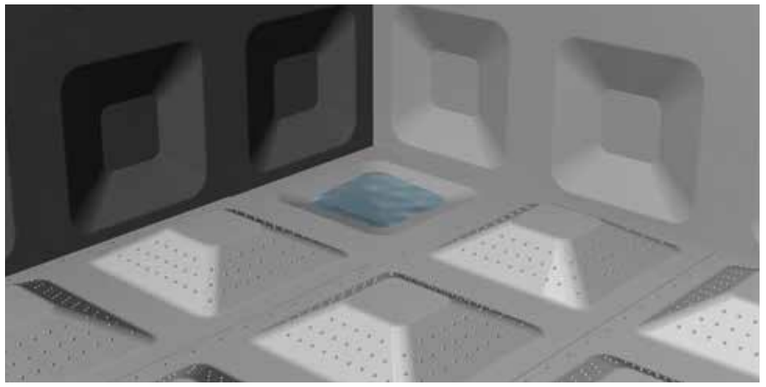
GRP isn't subject to erosion or corrosion like steel and concrete. This further prevents leaks and prevents the water from becoming tainted by foreign substances.

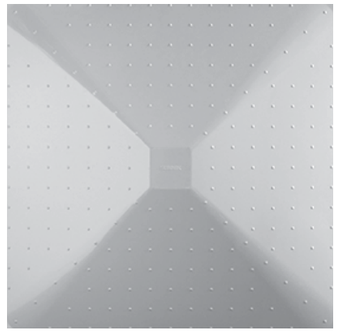
A MUCH STRONGER WATER TANK

All our GRP panels are reinforced with fibreglass woven mesh on the external panel surface to maximize tensile, flexural and shearing strength. Our panel design's structural rigidity is one of the highest on the market.

ECONOMICAL AND EASY TO MAINTAIN







DESIGNED FOR SAFETY

The roof panels come with an anti-slip profile for stable walking. Indicators on the outside side panels also show the water level, so maintenance staff can tell when drainage has completed.

FAST DRAINING AND EASY TO CLEAN

The floor of Sunnik's GRP Sectional Panel tanks consist of convex panels and a concave draining panel. This allows water to drain freely without sticking, and stops stale water accumulating during cleaning.

A COST-EFFECTIVE SOLUTION

Concrete and steel tanks can be costly to install and even more costly to repair and often need relining. Cheaper plastic and hand-laid fibreglass solutions are available but require replacing frequently.

GRP tanks require no internal or external coatings and last a long time. Our location in South East Asia allows us to provide water storage solutions at a competitive price.

BETTER HYGIENE, LESS CONTAMINANTS

Steel and concrete tanks are susceptible to algae and bacteria

No organic matter can live in Sunnik's GRP Sectional Panel tanks

FREE FROM ALGAE AND BACTERIAL GROWTH

Sunnik GRP panels have the maximum possible opacity. This means no light can enter the tanks, preventing chlorine evaporation and the growth of algae and bacteria. The panels undergo an SMC hot-pressing process, creating a mirror surface that organic matter cannot adhere to.

FREE FROM CHEMICAL RESIDUES

GRP doesn't corrode, and so the water doesn't get tainted with chemicals. The hot-pressing process also eliminates the possibility of styrene residue. This makes Sunnik's GRP Sectional Panel tanks ideal for potable water storage.

A WIDE RANGE OF APPLICATIONS

Sunnik's GRP Sectional Panel tanks' properties make them ideal for a wide range of uses, including commercial mining, food and factory production, air conditioning MAUs, fire protection, industrial liquids, rainwater harvesting, sea water and waste water storage.

Sunnik GRP Sectional Panels fully passed the WRAS, UK test BS6920-1:2000: "Suitability of non-metallic products for use in contact with water intended for human consumption with regards to their effects on the quality of water" up to 50°C.

PARTITIONABLE, EXTENDABLE AND RELOCATABLE

For customers with more complex requirements, we can install partitions within the tanks to allow for separate storage compartments. Tanks can also be extended later if required capacity increases, or fully packed up and installed in a new location.

CONFIGURATIONS TO SUIT ANY ROOM SHAPE

The panel-based design of the tank allows for modular installations. We can fit an GRP Sectional Panel tank around pillars in complex configurations to fill available space.

EASY-INSTALLATION WITH NO SPECIAL EQUIPMENT REQUIRED

Sunnik GRP Sectional Panels are lightweight and can be lifted by hand. Our installation staff therefore need no special equipment to install the panels and they can complete the work quickly.

WEATHER AND NATURAL DISASTER RESISTANT

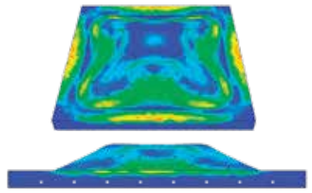
INSULATED PANELS FOR EXTREME HEAT AND COLD

GRP has a thermal conductivity of 240 times lower than that of steel. This helps prevent water freezing or overheating in extreme climates over long periods of time.

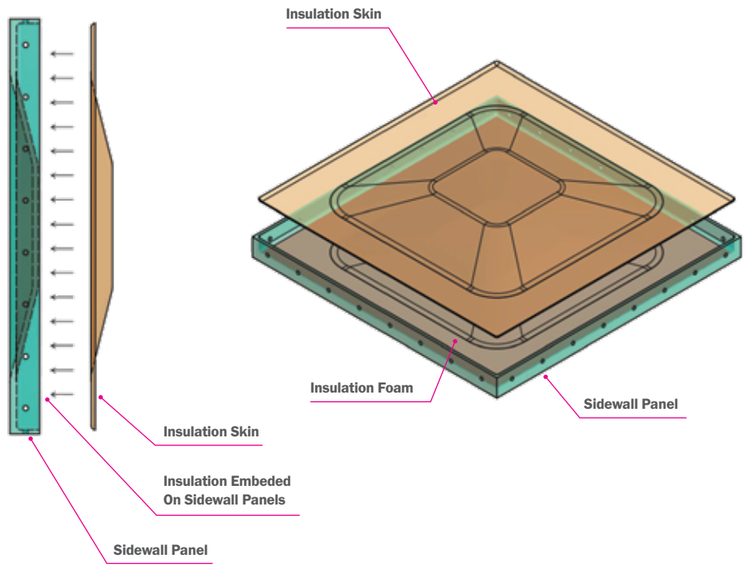
To help further insulate the panels, we can install 25 or 50 millimetre polyurethane foam induction sheets on the external GRP panel walls. This will help save energy necessary for heating or chilling water in extreme temperatures. It's also useful in industrial processes which require constant access to hot or cold water.

DESIGNED TO WITHSTAND HARSH CONDITIONS

Sunnik's GRP Sectional Panels are computer designed using finite element analysis. This tells us how the panels will perform during earthquakes, high winds and extreme temperature changes. With a factor of safety (FoS) of 6 times the maximum anticipated loads, our panels are strong enough to withstand some of the most catastrophic natural disasters.



Sunnik Insulated Panels are designed for hot and cold weather, with an insulating layer of high density, waterproof polyurethane foam with low thermal conductivity.



ACCELERATED WEATHERING TEST

Destruction from weathering occurs both outdoors and indoors. The severity can vary greatly with climate, causing unwanted product failures.

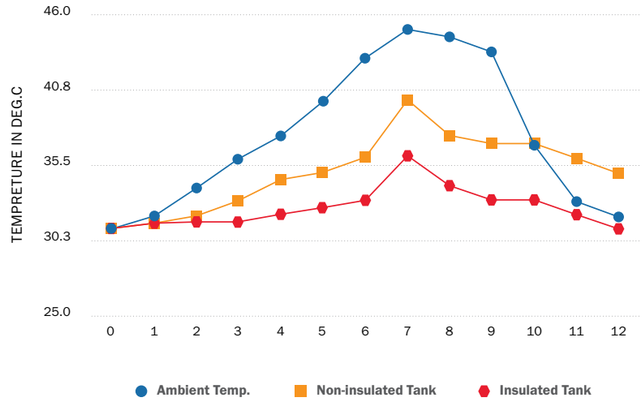
During the product's research and development, SUNNIK GRP panels underwent 3000 hours of accelerated weathering testing. The panels were exposed to ultraviolet light using a QUV Weathering Test Machine.

The test was conducted using a UV lamp for a duration of 3000 hours with an additional of 2-minutes exposure to water spray for every 8-hours of UV exposure.

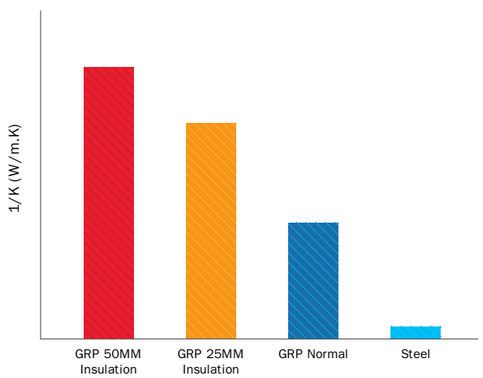
Accelerated Weathering Test Results

Property	Requirement of MS 1390:2010/SS 245:2014	After 3000 hours Weathering Test
Tensile Strength	min 70 MN/m^2	109 MN/m^2
Bending Strength	min 100 MN/m^2	193 MN/m^2
Elastic Modulus in Bend	min 6,000 MN/m^2	min 17,000 MN/m^2
Glass Content	min 25%	72%
Barcol Hardness	30% or 90% of the resin manufacturer specification (whichever higher)	40%
Water Absorption	max 1.0%	0.10%

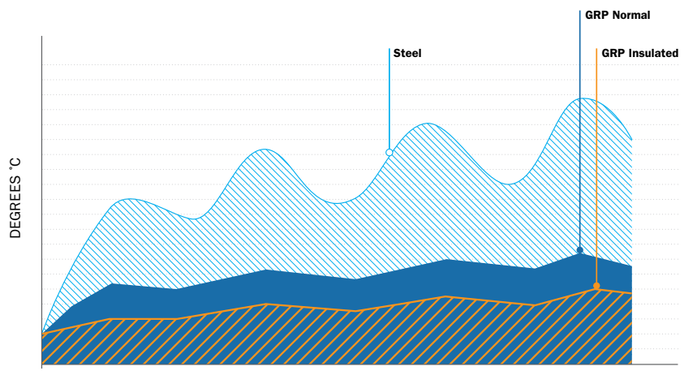
Change of Water Temperature (Hyphenated Test)



Thermal Insulation Properties



Water Temperature Variation



SUNNIK'S COMMITMENT TO THE ENVIRONMENT

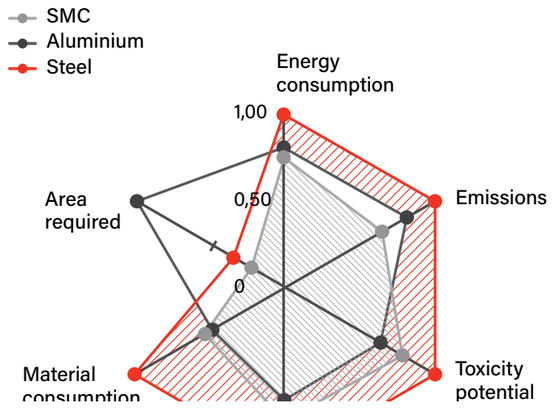
At Sunnik, we care about the impact our projects have on the environment, and so we've designed our GRP Sectional Panel solutions with eco-friendliness in mind.

The solution saves water over conventional water storage solutions, due to eliminated leakages. Our insulated panels can also help save energy in extreme climates, as they prevent the need for heating up or cooling down water to make it usable.

GRP is a fully recyclable material. Since the panels are modular, they can be reused in other projects instead of being discarded. If necessary, the panels can also be ground down and recycled as a filler for reinforced concrete.

The panels also use less energy and resources in manufacture and installation than other conventional means. Plus, the modular designs of the tanks allow for construction in unused spaces, reducing the need for demolition.

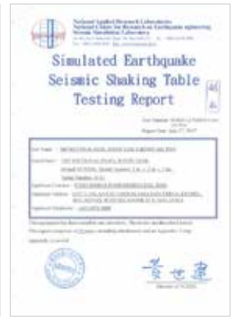
GRP Sectional Panel tanks truly are the water storage solution for the future.



Footprint of SMC GRP parts compared to aluminium and steel

THE HIGHEST QUALITY IS A TOP PRIORITY

We employ rigorous testing procedures under the harshest conditions and seek out the best certifications. This ensures the highest possible quality in what we deliver.



TUV SUD PSB, SINGAPORE

- Specification for glass reinforced polyester sectional water tanks

BUREAU VERITAS CERTIFICATION, UK

- ISO 9001:2008
- Manufacturing, installation, testing and servicing of sectional panel tanks

SIRIM QAS INTERNATIONAL, MALAYSIA

- BS EN 13280:2001 | SS 245:2014 | MS 1390:2010
- Fibreglass reinforced polyster (GRP)sectional water tanks
- Glass-fibre reinforced polyster (GRP)sectional water tanks

WATER REGULATIONS ADVISORY SCHEME, UK

- BS6920-1:2000
- Suitability of non-metallic products for use in contact with water intended for human consumption with regard to their effect on the quality of water

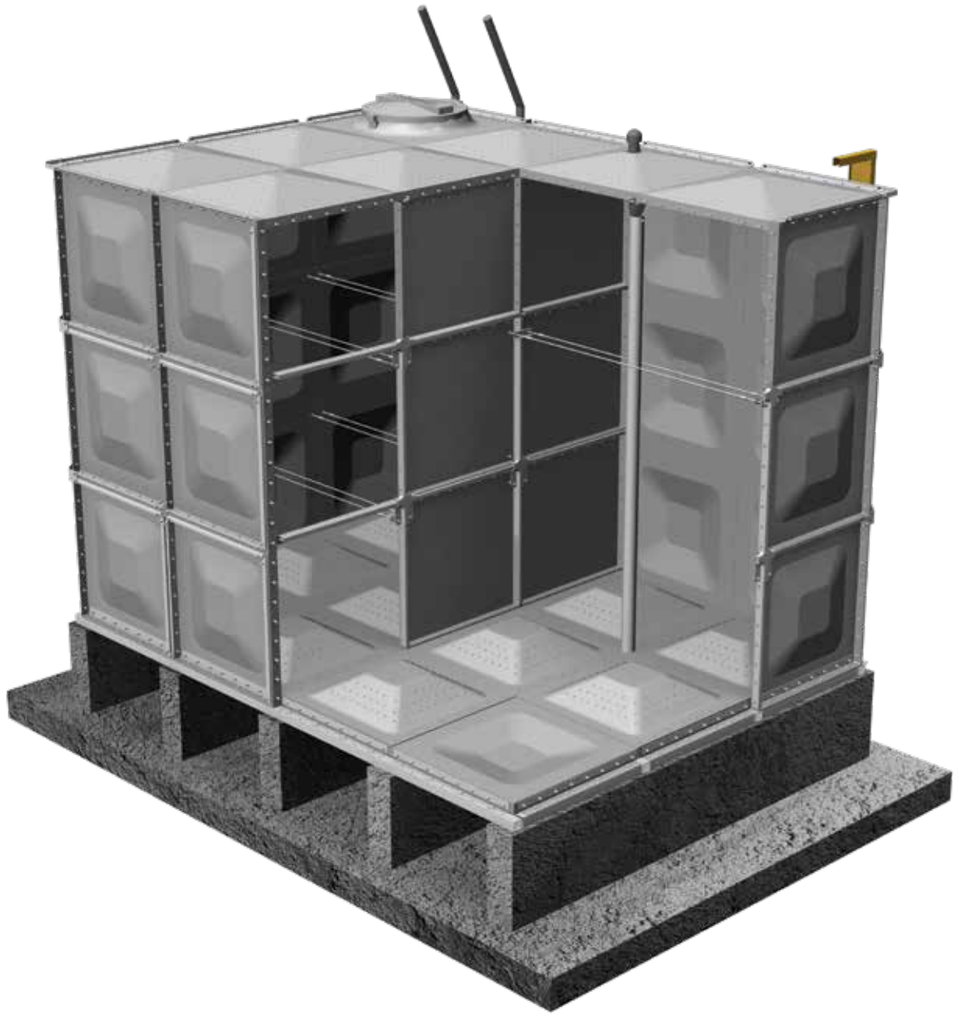
NATIONAL CENTER FOR RESEARCH ON EARTHQUAKE ENGINEERING, TAIWAN

- Simulated earthquake seismic shaking table testing report
- GRP sectional panel water tank earthquake test

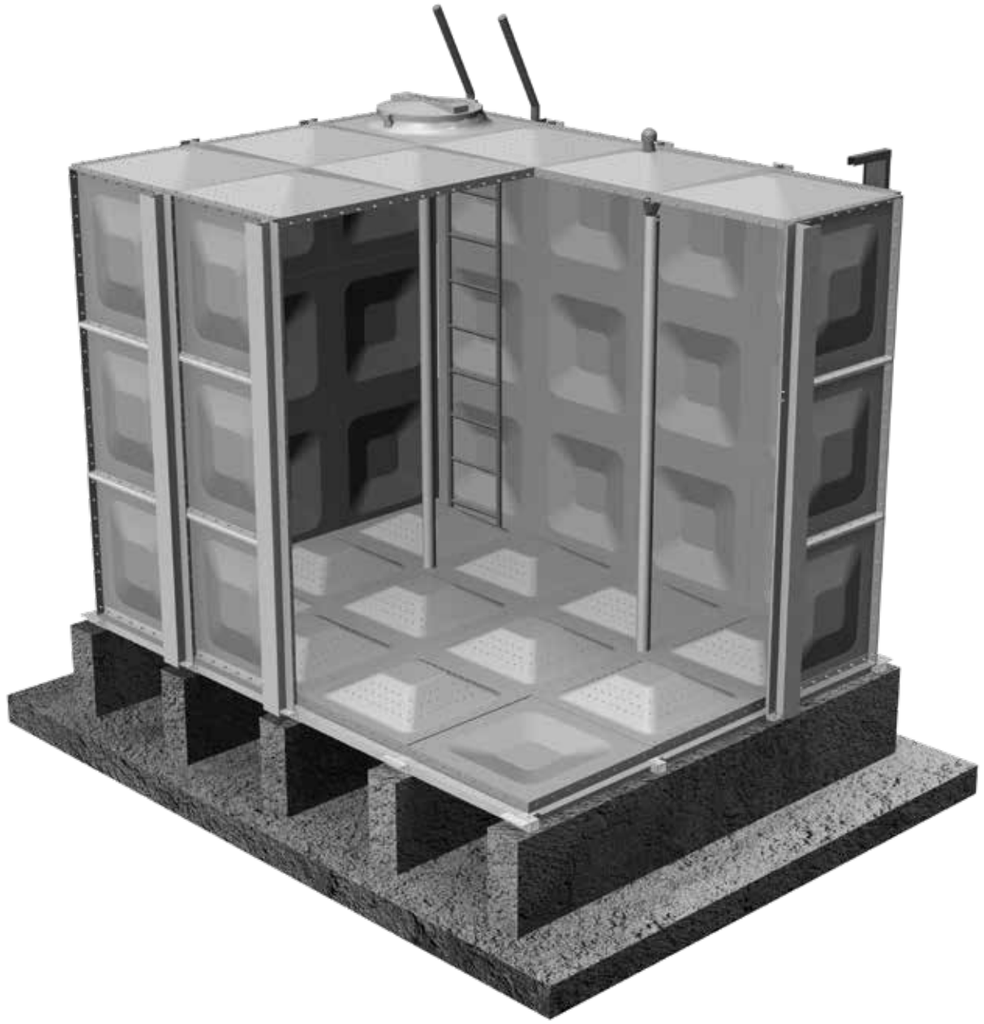
SURUHANJAYA PERKHIDMATAN AIR NEGARA, MALAYSIA

- MS 1390:2010 (SPAN/BPI/300-10/1675/A/W-1)
- Storage cistern/tank – GRP water tank - sectional

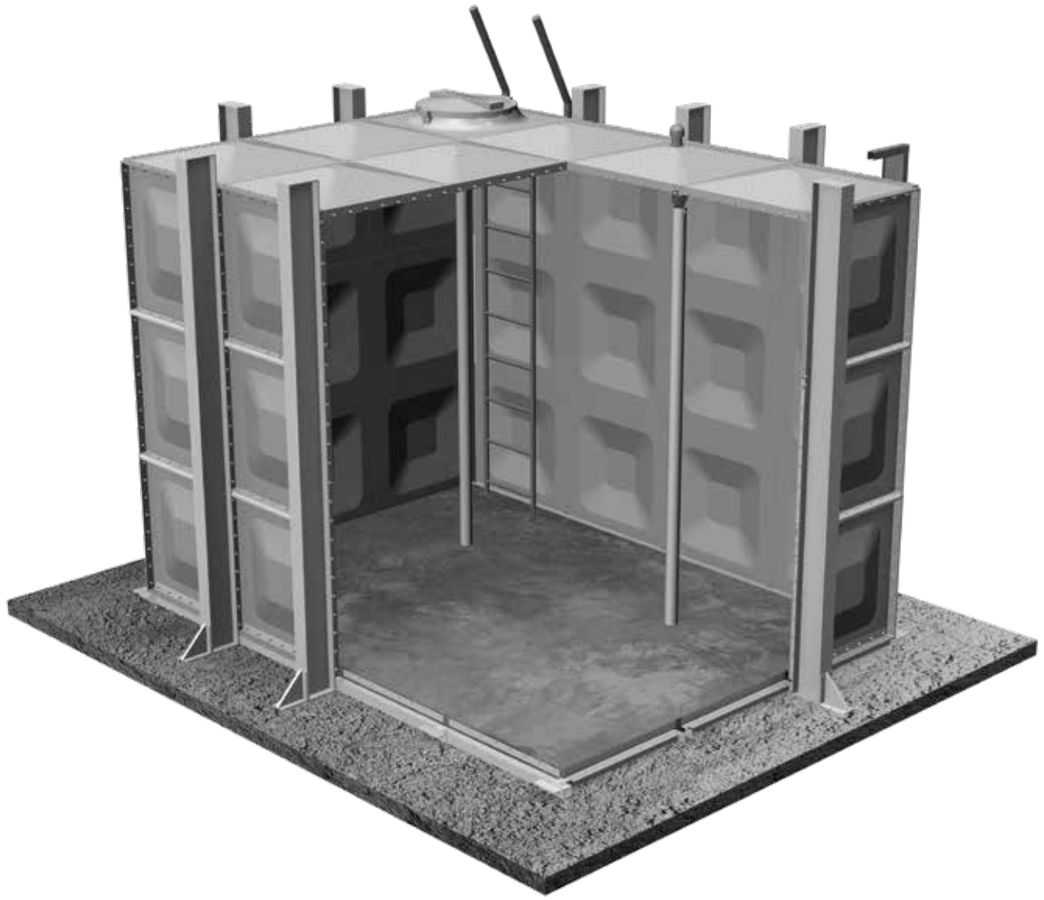
INTERNAL REINFORCEMENT STRUCTURE



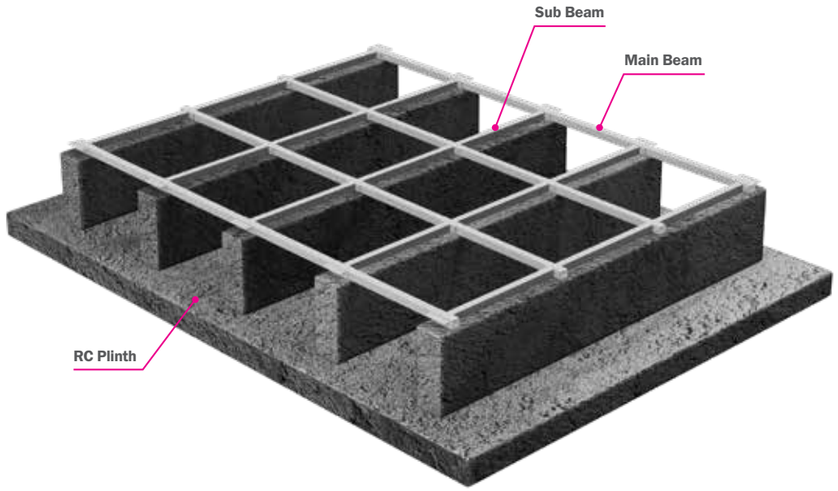
EXTERNAL REINFORCEMENT STRUCTURE

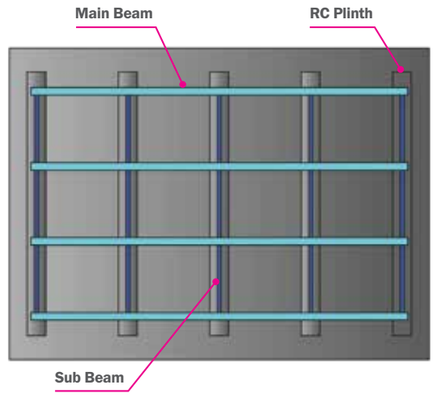


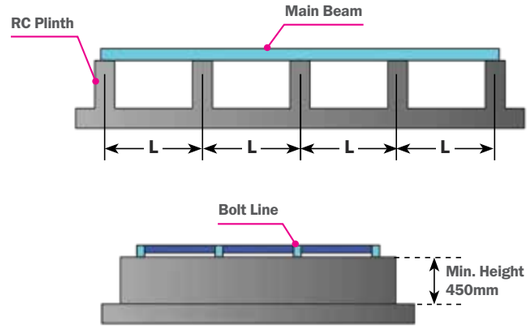
CONCRETE BASE TANK WITH EXTERNALLY BRACED



STEEL SKID BASE







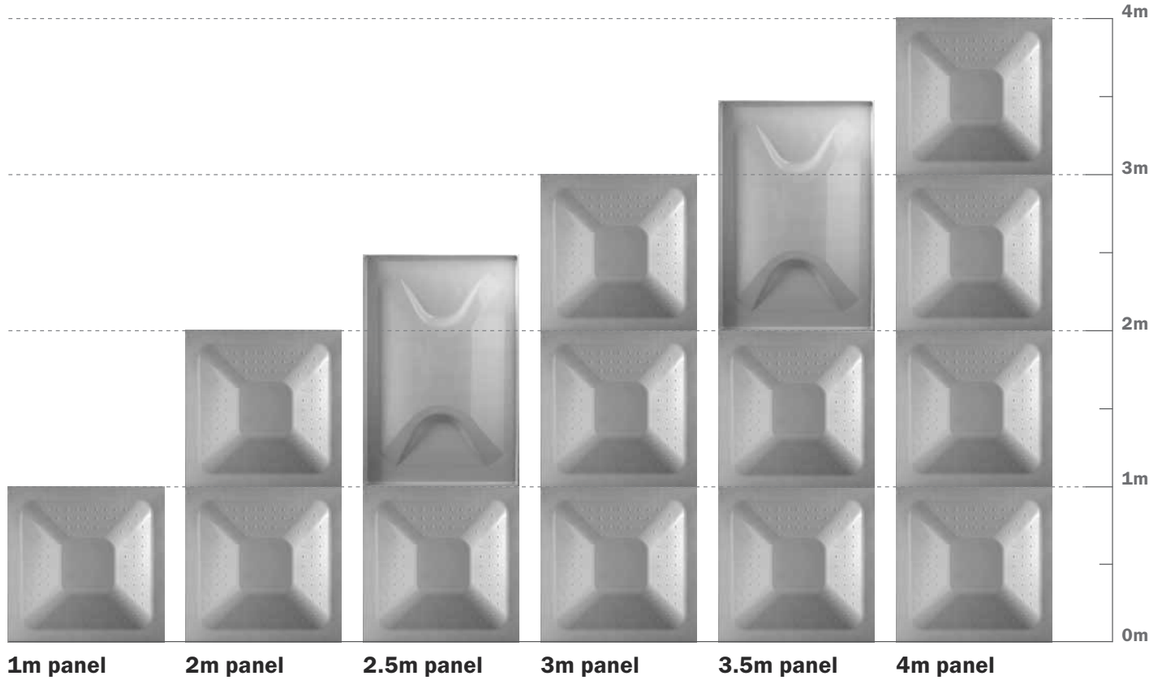
INSTALLATION PROCESS

1) When calculating space for the tank, ensure 450 to 600mm floor access space is available.
2) Install steel footing on top of the concrete foundation.
3) Align panels for pre-assembly.
4) Apply sealant.
5) Bolt panels together.
6) Connect base and wall panels.
7) Install roof panels, supports, pipes, etc.
8) Install any required reinforcements.
9) Fill with water to test.

TANK HEIGHT	BEAM	SKID DESIGN SIZES	
		1.0M Plinth (L)	2.0M Plinth (L)**
1.0M	Main Sub	SHS 50 x 50 x 4mm thk SHS 50 x 50 x 4mm thk	CH 100 x 50 x 5mm EA 50 x 50 x 5mm
1.5M	Main Sub	SHS 50 x 50 x 4mm thk SHS 50 x 50 x 4mm thk	CH 100 x 50 x 5mm EA 50 x 50 x 5mm
2.0M	Main Sub	SHS 50 x 50 x 4mm thk SHS 50 x 50 x 4mm thk	CH 125 x 65 x 6mm EA 65 x 65 x 6mm
2.5M	Main Sub	SHS 50 x 50 x 4mm thk SHS 50 x 50 x 4mm thk	CH 125 x 65 x 6mm EA 65 x 65 x 6mm
3.0M	Main Sub	SHS 50 x 50 x 4mm thk SHS 50 x 50 x 4mm thk	UB 100 x 100 x 14.8kg/m EA 75 x 75 x 8mm
3.5M	Main Sub	SHS 50 x 50 x 4.5mm thk SHS 50 x 50 x 4.5mm thk	UB 100 x 100 x 14.8kg/m EA 75 x 75 x 8mm
4.0M	Main Sub	SHS 50 x 50 x 4.5mm thk SHS 50 x 50 x 4.5mm thk	UB 200 x 100 x 17.8kg/m EA 80 x 80 x 8mm

* The recommended skid design sizes are for certain extreme conditions. These may be further enhanced based on the operating environment and conditions determined by the manufacturer. Changes may happen without notice. Please contact the manufacturer for final layout plans.
** Subject to additional charges.

SUNNIK GRP PANEL SIZES



SUNNIK PANEL DESIGN

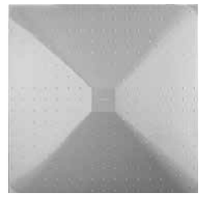
SUNNIK EXCLUSIVE PANELS DEVELOP

Wall panel

Bottom Panel

Partition/Flat Panel

Roof Panel



Half panel

1.5m panel

SUNNIK WATER TANKS COMPLY TO:

- MS 1390 : 2010
- SS245 : 2014
- BS EN 13280 : 2001
- WRAS BS6920 : 2014

CONTACT

OUR OFFICE:

Sunnik International Sdn Bhd (1167480-V)

Lot 3, Jalan CJ5
Cheras Jaya Industrial Estate
Balakong, 43200 Selangor D.E
Malaysia

T +603 9074 8888
F +603 9075 3333/2
E enquiry@sunnik.com.my
W www.sunnik.com.my

MEMBER OF:

- American Water Works Association
- The International Water Association
- Federation of Malaysian Manufacturers
- Construction Labour Exchange Centre Berhad
- Construction Industry Development Board Malaysia

COMPANY CERTIFICATION:

ISO 9001 BUREAU VERITAS Certificati

AWARD:

The Malaysian Construction Industry **Excellence Awards 2013**
INTERNATIONAL ACHIEVEMENT
Special Mention

Federation of Malaysian Manufacturer Award 2014
TOP 3 FINALIST

PRODUCT CERTIFICATION:

- Standards Organisation of Nigeria
- State of Qatar Ministry of Interior
- TUV SUD
- National Science Foundation
- SPAN National Water Services Commission Malaysia
- Brunei
- Water Authority Hong Kong
- SIRIM BS1564:1975
- Water Regulatory Advisory Scheme, UK (WRAS)

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