

Water Engineering group has been trading under continuous private ownership for 22 years earning a reputation as a quality focused team of water professionals with a strong commercial projects background.

We offer a wide product range of Corrugated tanks with internal membrane lining, Galvanized & Epoxy coated tanks and Glass Fused to Steel coated tanks ranging in capacity from 40m<sup>3</sup> to 40,000m<sup>3</sup>. We are the Australia – Pacific Agent for US based manufacturer CST Industries.

Our flexibility and know-how gives us a competitive edge in finding quality storage solutions for virtually all liquid containment requirements.

# Glass Fused to Steel 7,700m<sup>3</sup> Fire Water Reservoir for Caltex Refineries – Brisbane 28.138m diameter x 12.465m high

CST INDUSTRIES, INC.



**CST's Vitrium Glass fused to steel is the premium coating in today's market. It is a single, strong, integrated glass and steel material fused together at 800° C in a controlled process furnace. The hard, inert barrier on both interior and exterior tank surfaces guards against corrosion and is Impermeable to liquids and vapours. It offers excellent impact and abrasion resistance.**

**CST INDUSTRIES, INC.**



3 x 292KI tanks designed for prevailing high cyclonic conditions in Darwin. Tanks are Glass Fused Steel with Knuckle™ roof type in Cobalt Blue finish.

Roof access platforms were positioned to facilitate safe access level from tank wall.



6.8m diameter  
8.5m high

# “kne” Knuckle Roof Type with space saving walkway



2,800m<sup>3</sup> Standpipe Reservoir for Goldenfields Water Temora, NSW. Flat terrain. Height gives pressure to water lines.



# 2,800m<sup>3</sup> Standpipe Reservoir for Goldenfields Water CC – Temora, NSW

CST INDUSTRIES, INC.



## Concrete v Bolted Steel

**Bolted steel tanks can be extended in height at a later stage and can be dismantled, relocated and re - installed**

CST INDUSTRIES, INC.





# Site Bolted panels

**Bolted steel Glass-fused wall panels have a unique stainless chamfered edge allowing superior coating and protection.**

**Wall plate hardware is hot dip galvanised with copolymer-encapsulated bolts and Bottom rolled angle for foundation attachment to suit loadings & shear.**



Water Corp Southern Seawater JV -Desalination Plant,  
Binningup WA Phase I & II expansion.

CST INDUSTRIES, INC.

14 Glass Fused to Steel tanks consisting Filtrate tanks,  
Permeate tanks & Lime Water tanks



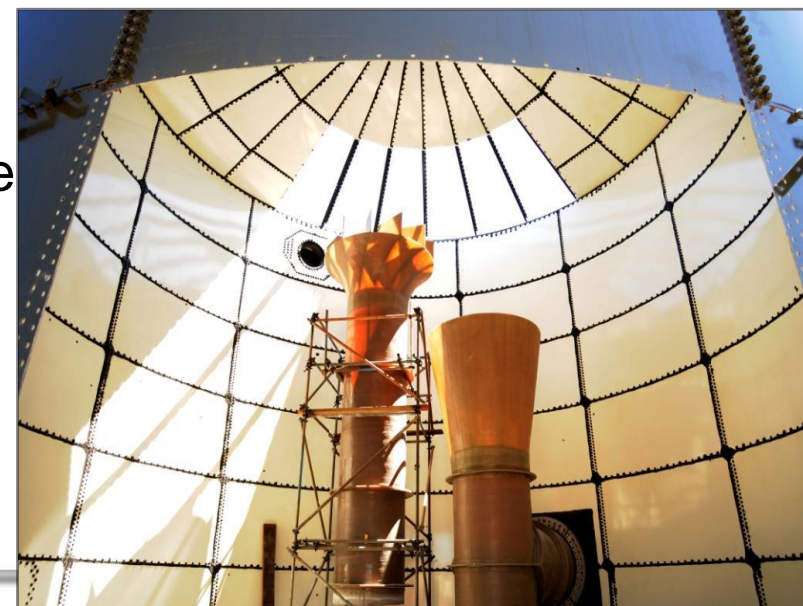
## Water Corp Southern Seawater JV - Desalination Application

The seven tanks are in Glass Fused Steel Forest Green with “ESR” externally support roof.

Large diameter nozzles were manufactured and supplied in “GRP”

PMT Water Engineering has secured the tender for the expansion of desalination plant in 2012 and is currently installing another seven tanks.

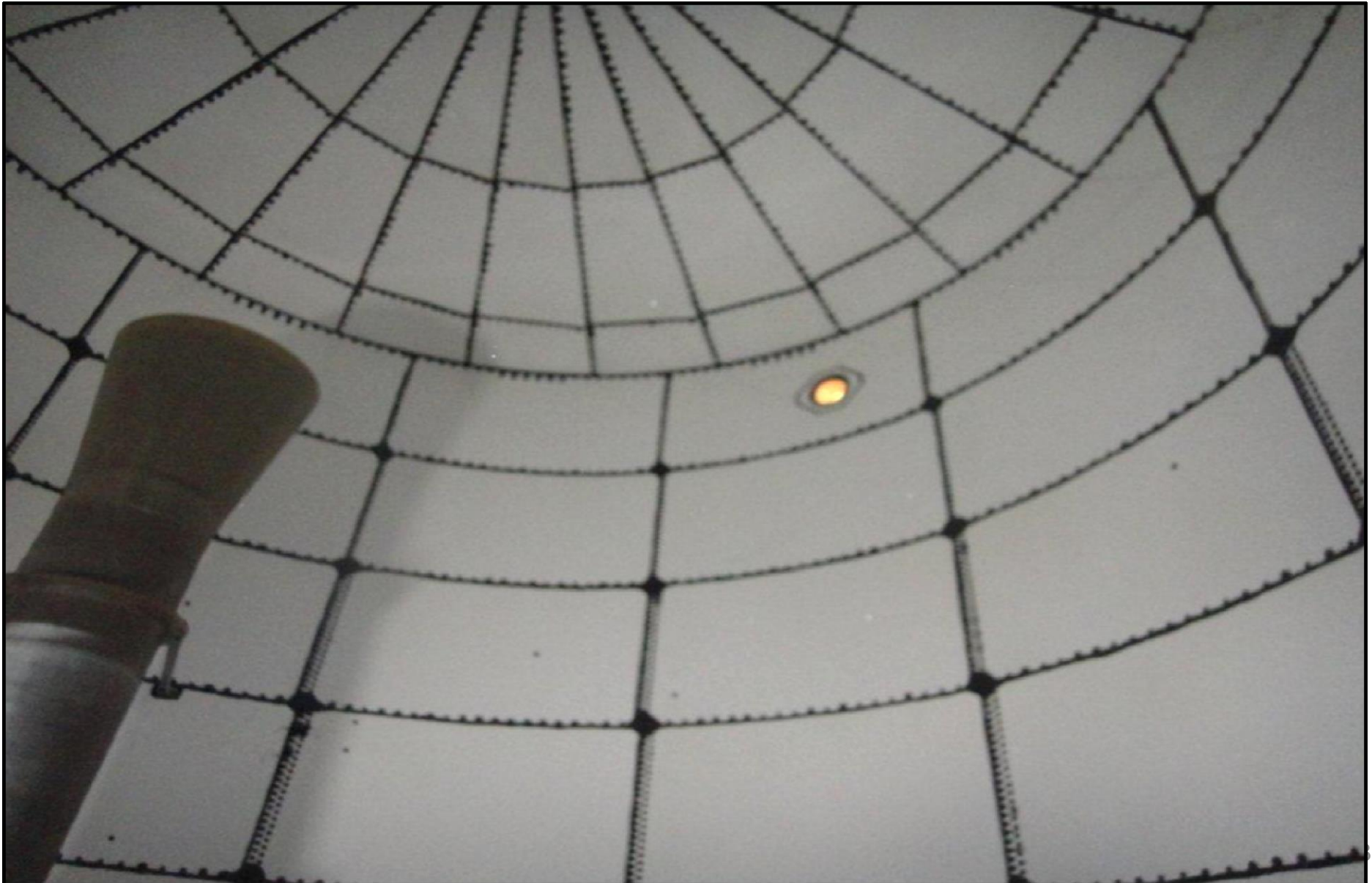
Glass-fused steel is without peer in the world. There are over 200,000 installations in over 110 countries typically meeting many Australian, ASIC, BSIC, AWWA & ANSI Standards & Codes.



# Water Corp Southern Seawater JV - Desalination Application



Inside “ESR” Roof (externally supported).  
Beams are on outside, suited for highly  
aggressive applications



# 8,500m<sup>3</sup> Heavy Fuel Oil Tank & Containment Tank Lihir Gold Ltd -PNG



# Design, Supply & Install Newcrest Mining Ltd 38.39m Diameter x 8.9m high

Our manufacturer was awarded a contract for design, supply & installation of a 7,500m<sup>3</sup> heavy fuel oil tank. This project presented a number of challenges with high engineering specification requirements due to seismic activity.

Newcrest required a secondary containment tank and allowance had to be made for the tanks to move independently of each other in the event of an earth quake. This design incorporated a split inter tank roof.

The main tank is Trico Bond EP™ thermal bonded epoxy with an aluminium Geodesic™ clear span dome roof. There is stairway access to both the containment and main tank. Long design life was a critical part on influencing the clients decision

# Primary Storage Tank Access





# Secondary Containment



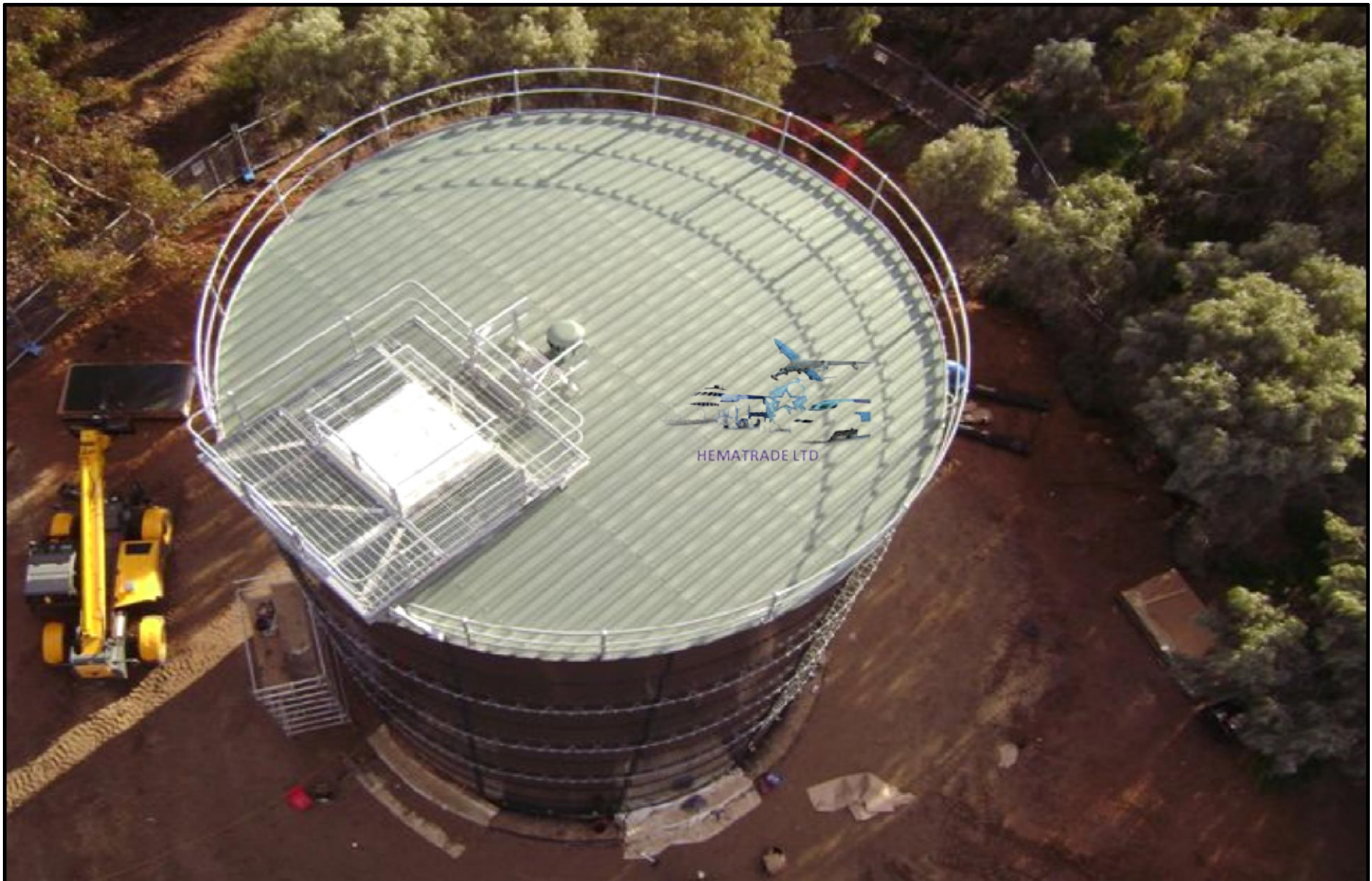
# Inter-Tank Roof & Integrated Access



# Finished Product - 14 weeks



# Dome Roof with Surround Hand Rail and Platform



# FOUNDATION



# Jack Arrangement



“gde” Geodesic™ Dome Roof – Marine Grade Aluminium suited for sewage, hydrogen sulphide and other aggressive solutions

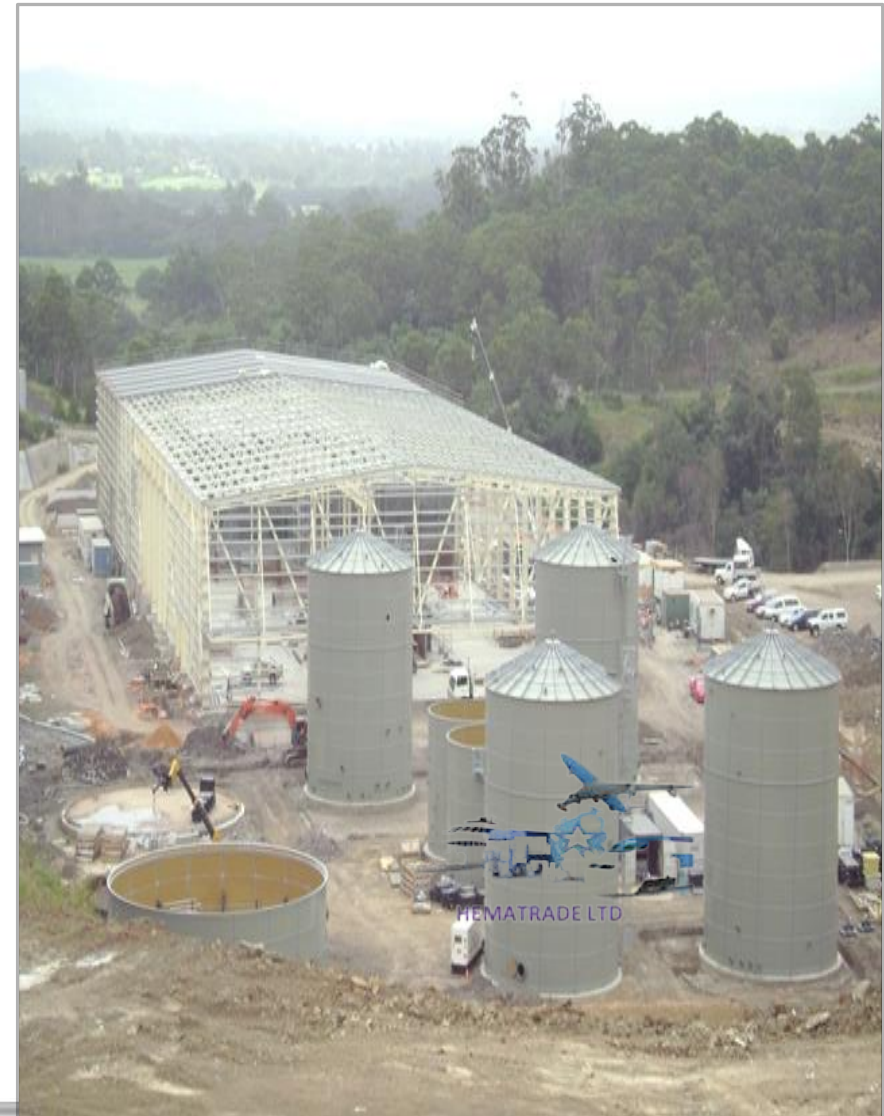


# WSN Bio Digester Plant Camden, Jacks Gully Landfill, NSW (ESR roofs used)





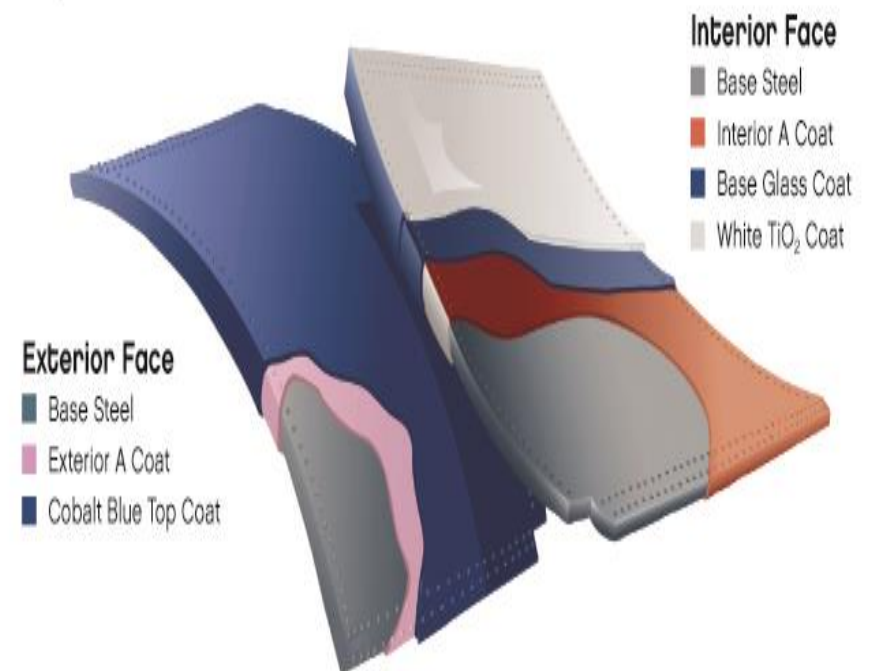
# WSN Environmental Solutions Bio Digester Plant Jacks Gully Landfill (ESR roofs used)



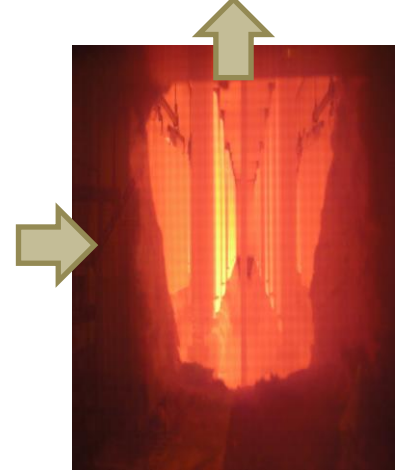
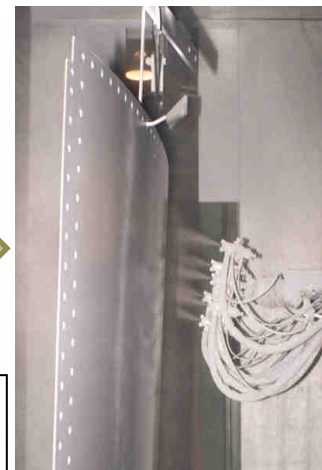
# Vitrium® Glass-Fused-To-Steel Technology

- Porcelain enamel chemically and mechanically fused to steel surface
- TiO<sub>2</sub> (titanium dioxide) enhanced glass with ultra fine glass bubble structure for durability & flexibility
- Proprietary nickel-oxide base coat ensures consistent fusion and glass quality
- Thickness on interior ranges from 10-18 mils (260-460 microns) on exterior 7-15 mils (180-380 microns)
- Service Range: To 60°C, pH 2-11
- Lowest potential for bacterial growth in potable water storage
- Proven 50+ year field service life

## Physical Properties – Glass-Fused-to-Steel Vitrium Technology



- Blast – steel shot/grit for critical adhesion profile
- EdgeCoat™ thermally applied stainless steel edge coating
- Proprietary glass particle sizing process to yield optimum glass structure and coverage
- Precise robotic spray application of vitrium® glass coating. (Two application and drying cycles)
- Glass coating and steel panels are fused in a state-of-the-art enameling furnace with precise heat controls at 1500 F
- High voltage defect test on all sheets
- In-House QC tests to ensure quality and long term durability



## Optibond Epoxy Coating System

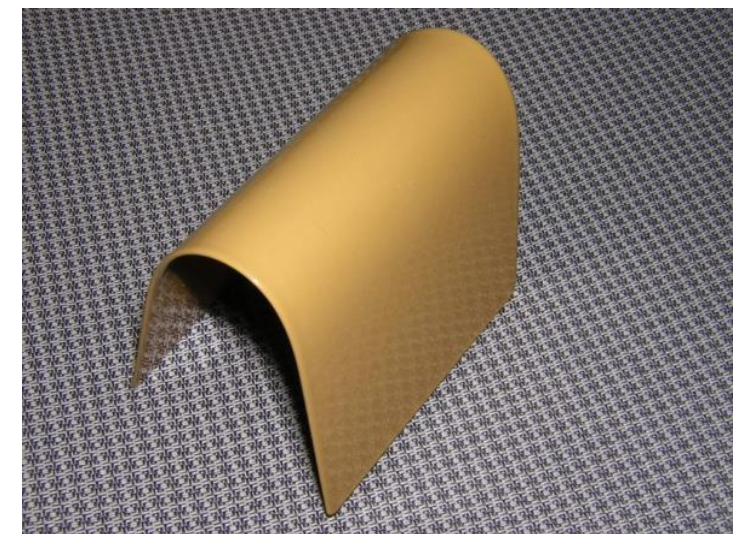
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**CST uses premium epoxy coating technology providing maximum corrosion resistance & long life. Continuous R&D allows us to offer the finest epoxy coating available to the market.**



# OptiBond™ Thermoset Epoxy Technology

- **Proprietary polymer Epoxy Coating**
- **Powder based – dry – 100% Solids – no solvents used**
- **Electrostatic Application of powder coat giving Precise uniformity and Process Control**
- **Cured at controlled temperature to maximize bonding to steel substrate**
- **Polyurethane topcoat applied for UV protection providing extra durability & longevity**
- **Excellent coverage and flexibility**
- **NSF Approved for the storage of potable liquids**
- **Proven field performance of 20+ years in certain applications**



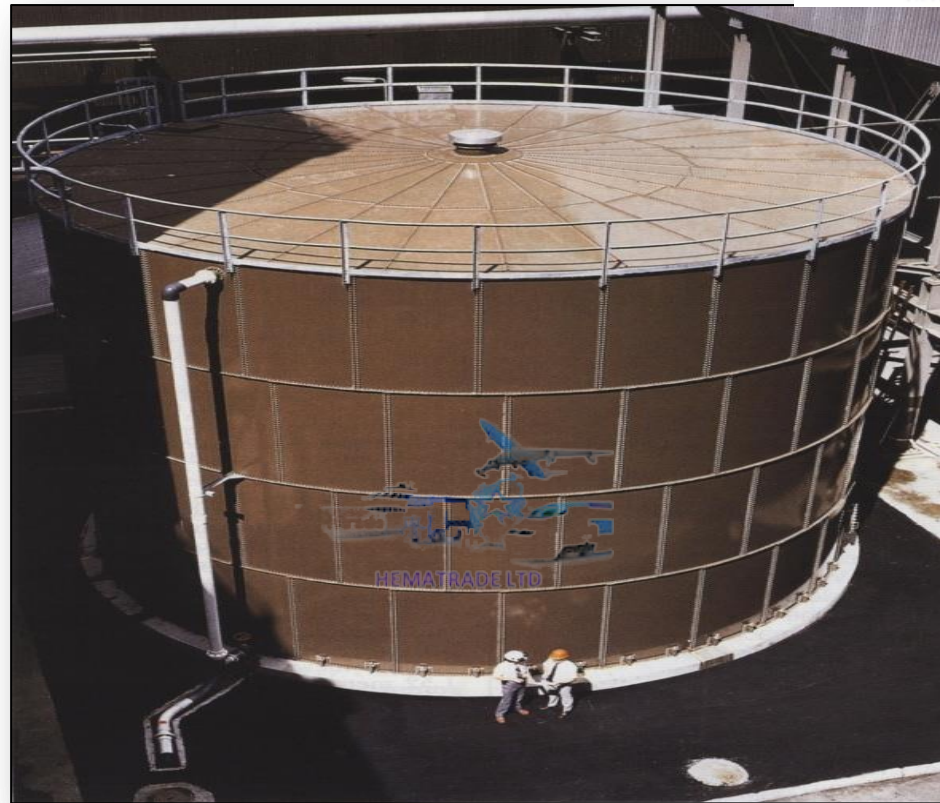
# OptiBond™ Thermoset Epoxy Process

- De-grease Wash / Rinse
- Oven Dry
- Surface blast with engineered grit material & electrostatic Spray Coating
- Curing at a controlled temperature
- Exterior Topcoat
  - ✓ Choice Of Colors
  - ✓ Performance Urethane
  - ✓ Extended UV Resistance
- High voltage defect test on all sheets
- Film Thickness Test





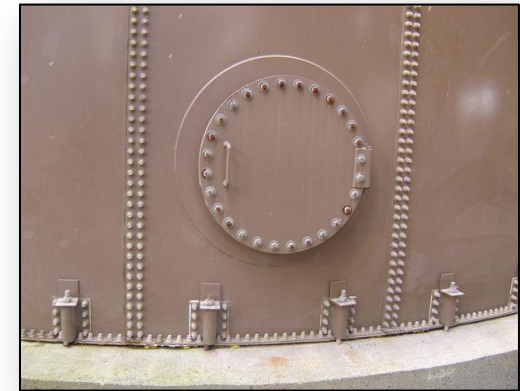
A Case Study – Epoxy tank  
28 August 2007 Inspection  
20 Years In Service



# HUNTLEY POWER PLANT – NEW ZEALAND

## Exterior Tank Views

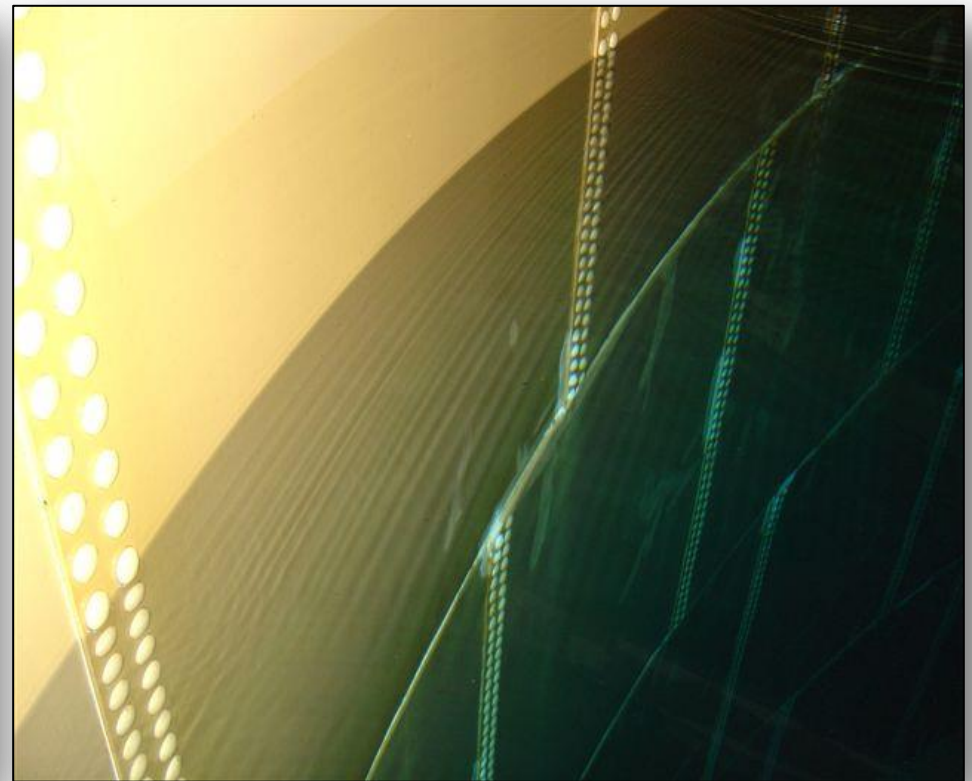
- The tank was **installed in 1986** at the Huntley Power Plant in New Zealand. The tank is exposed to aggressive industrial ambient conditions, and coastal salt laden air with high UV conditions.
- The tank, storing **de-mineralized water**, is used for boiler feed water, reserve fire protection water supply and general plant service water.
- Tank details include...
  - Diameter 9961 mm x height 9827 mm – capacity 750 m3
  - Interior Lining – Factory applied thermosetting baked-on epoxy
  - Exterior Coating – Zinc rich primer, epoxy intermediate coat, acrylic urethane topcoat
- At the time of inspection there had been no internal or external maintenance or repair performed during the 20 year service life of the tank







- These photos show additional detail views of the tank exterior. Note the multiple sharp corners and edges and the quality of the coating system in this aggressive industrial power plant application.



- These photos show the interior lining of the tank after 20+ years. The lighter colored areas are where touch-up of the coating was performed during original construction – there has been no subsequent maintenance of the interior lining system

## After 20 Years – US\$ 500 Total Maintenance Cost

After 20 years of service – the client is only replacing some of the deteriorated plastic exterior push on “nut caps”  
Over the full life of the tank – there have been no leaks and no requirement for internal or external coating repair or maintenance of any kind.



Series "FP" Flat Panel Membrane Lined panels vary in thickness. Designed to ANSI / AWWA design Codes D 103 (2.5 mm thick minimum thickness).

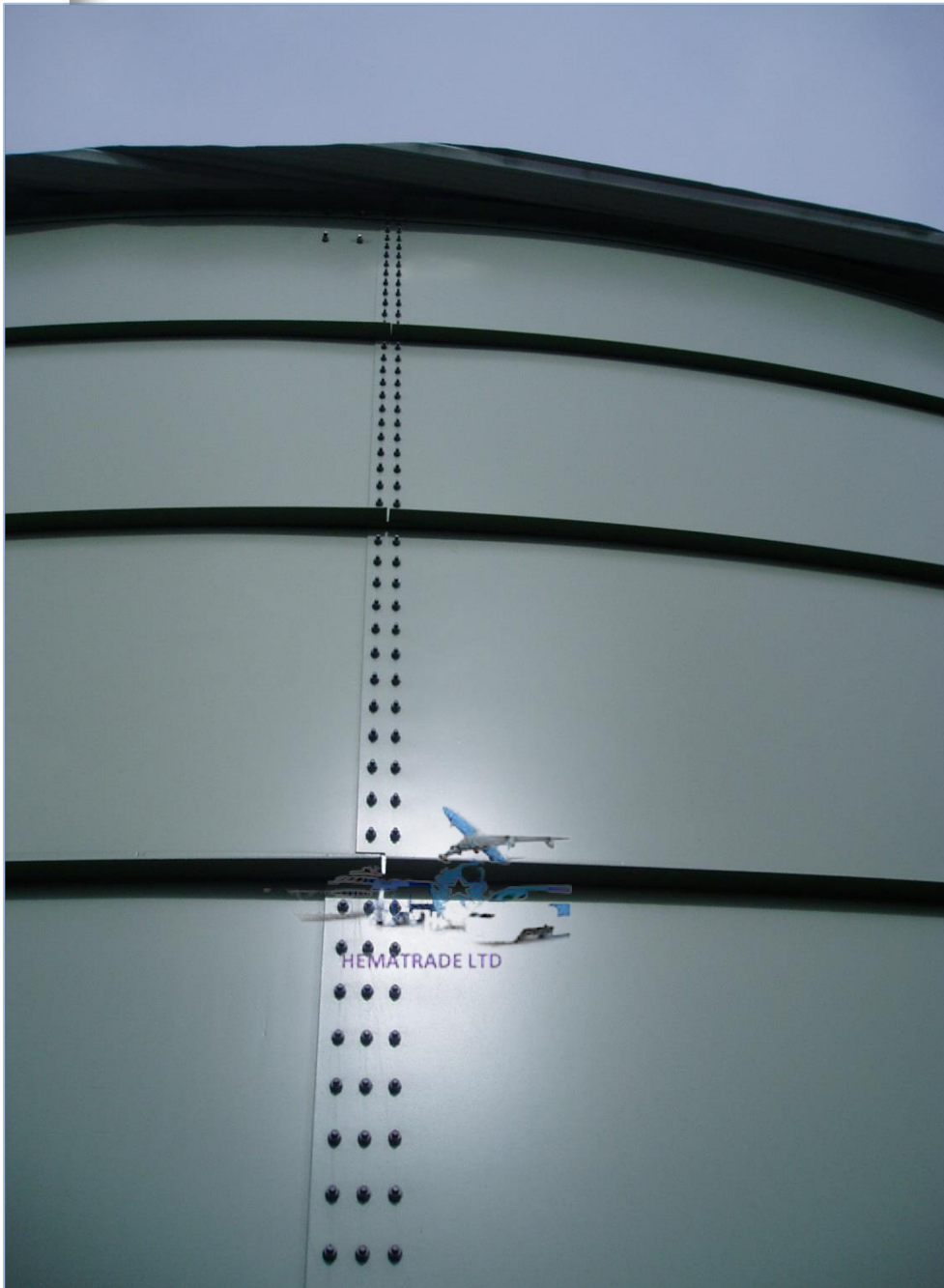
The "FP" series incorporates the use of "Wind Girt" angles, generally 65 x 65 ( thickness varies depending on demands i.e. "wind "loads) as well as top & bottom base angles 75x 75



# Series "FP" Flat Panel Membrane Lined



# Series "FP" Flat Panel Membrane Lined Colorbond or Galvanized



# Series "FP" with Trough Deck Roof



# Series “FP” with Trough Deck Roof





# Typical concrete Ring Beam Foundation for Commercial tank



# Series 220 Membrane Liner Tank



# Series 220 Membrane Liner Tank



# Series 220 Membrane Liner Tank



# Series 220 Membrane Liner Tank



# Series 220 Membrane Liner Tank





# Series 220 Membrane Liner Tank



# Series 220 Membrane Liner Tank





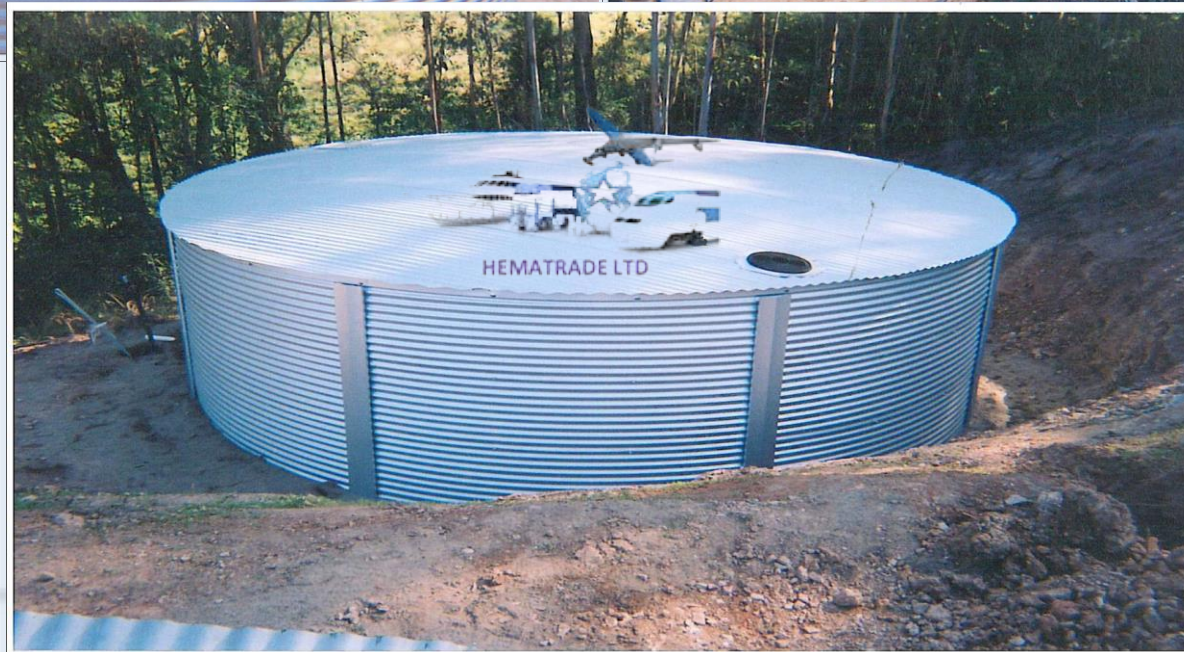
# Series 220 Membrane Liner Tank



# Series 220 Membrane Liner Tank



# Series 220 Membrane Liner Tank



# Manus Island Water Infrastructure Upgrade

Our supplier and partner was contracted by IOM (International Organisation for Migration) to upgrade water infrastructure facilities at Manus Island.

Works comprised:

- Refurbish Pump Room - new valves/ pumps. Refurbish and replace connecting piping and new “WTP” water filtration / treatment plant .
- Supply and install potable and raw water tanks at the Water Treatment Plant and further uphill as a header tank for gravity feed.
- Strip, refurbish & epoxy paint large sedimentation filters (inverted rhomboid welded steel open top tanks)
- Remediation and new reticulation piping / mains to accommodation
- Refurbish ex US military WWII vintage concrete tank and re-line.
- New pump intake, raw- water harvesting, submerged device & pipe-work .
- Radio telemetry to operate pump station and Water Treatment Plant from the header reservoir tank on hill top

# Manus Island PNG upgrade

## Storage tanks & Water Filtration / treatment plant

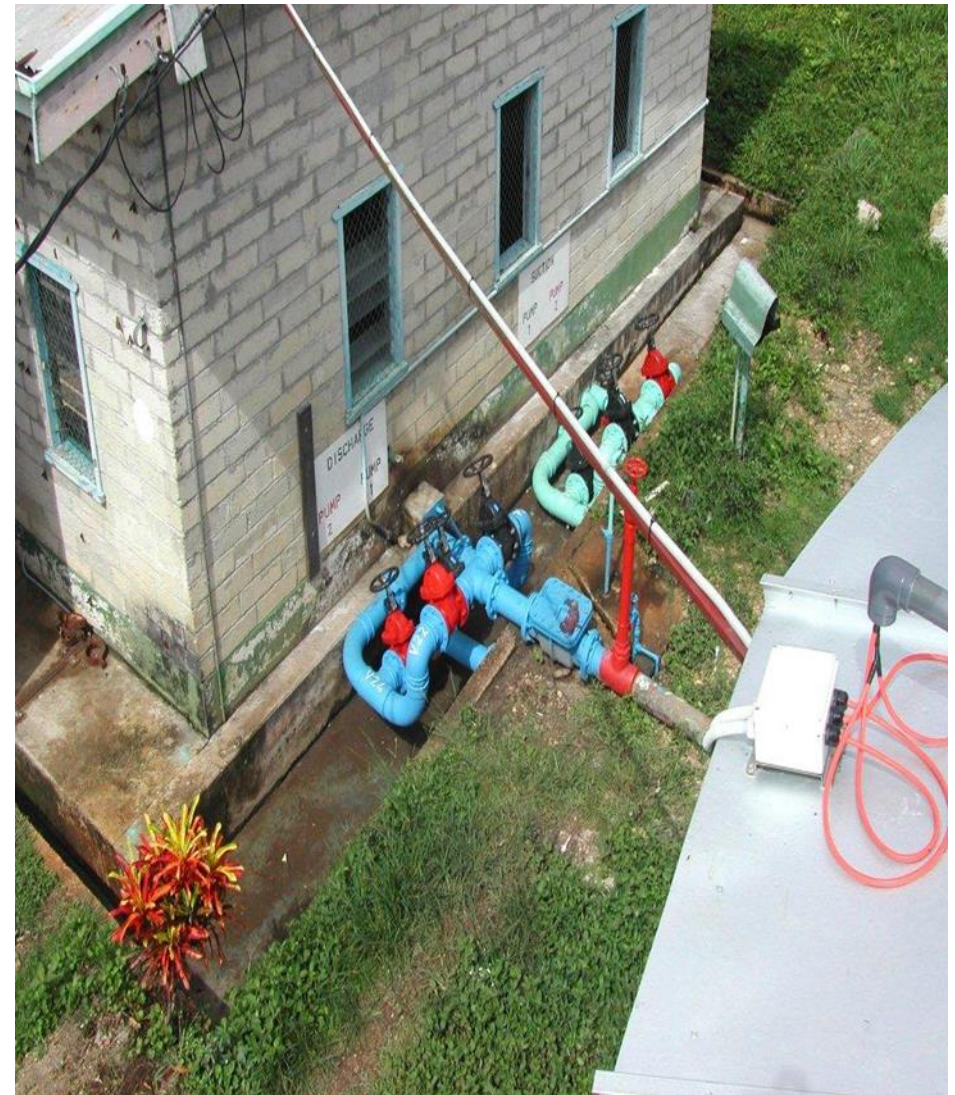


# Manus Island upgrade

Strip & refurbish epoxy paint large sedimentation filters on inverted rhomboid open top tanks

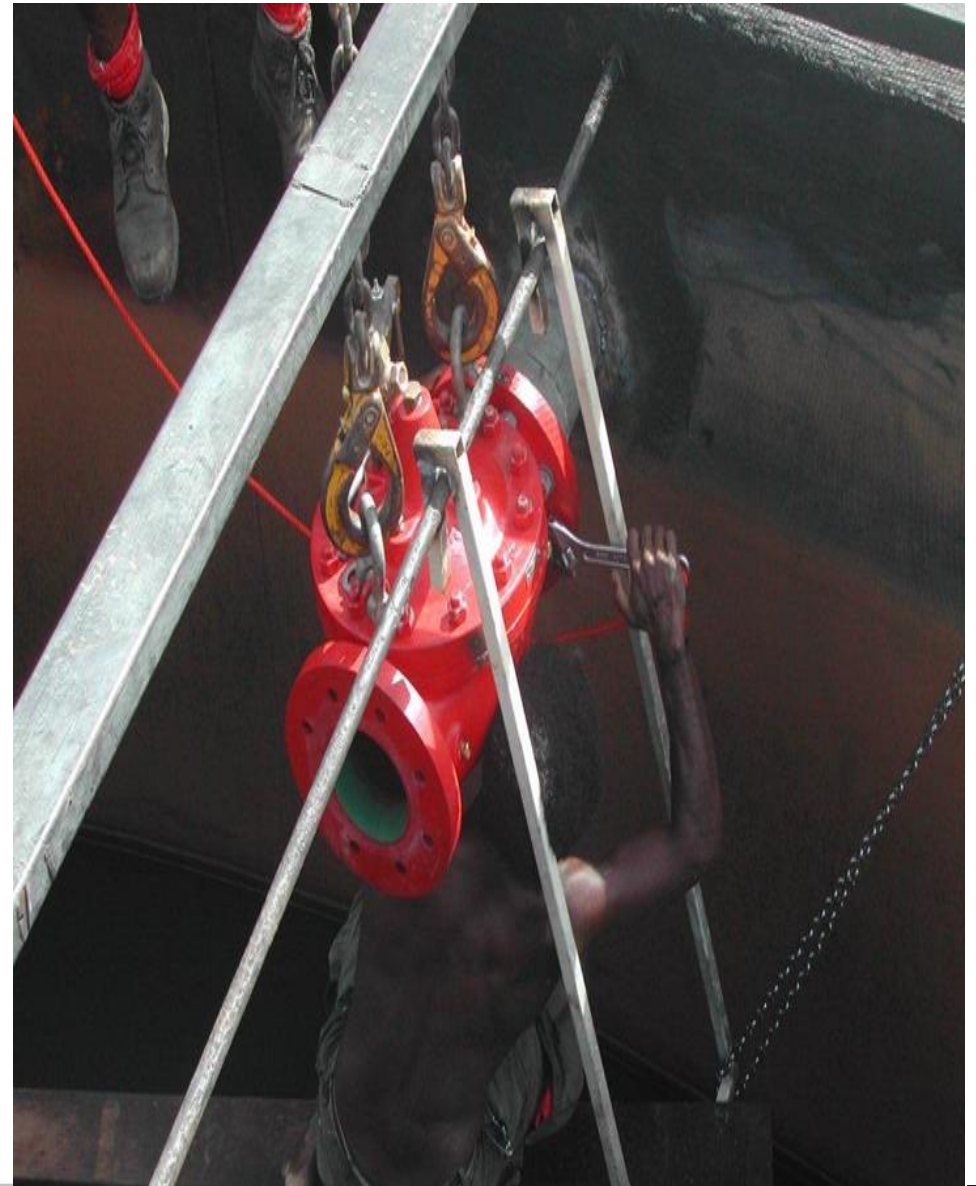


# Manus Island upgrade PNG



# Manus Island infrastructure upgrade PNG

Refurbish pump house, new valves/ pumps. Refurbish and replace connecting piping





# Manus Island upgrade PNG

## Header Reservoir potable water tank



# Watercorp WA Millstream Dam-Buffer Tank



Watercorp WA

CST INDUSTRIES, INC.

# Millstream Dam - Buffer Tank

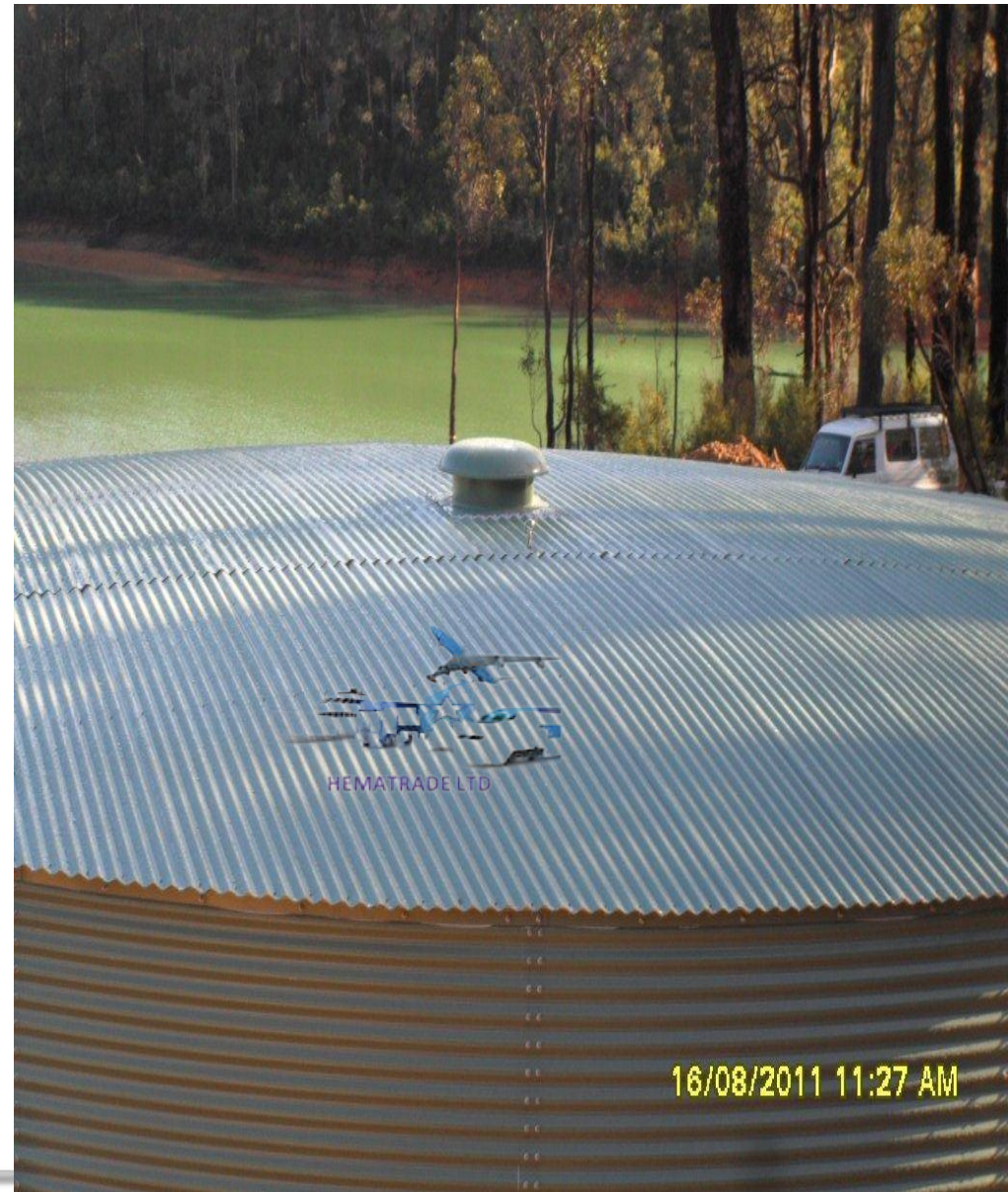


# Watercorp WA

CST INDUSTRIES, INC.



## Millstream Dam - Buffer Tank



# BP 'Spotsdar' Solar Project, Mindanao, Southern Philippines (50m<sup>3</sup> capacity)



## BP SOLAR / PMT WATER ENGINEERING PROJECT

Our manufacturer worked with BP Solar Madrid on this jointly funded Ausaid & Philippines Department of Agrarian Reform project requiring the supply and installation of 500 elevated kit form tanks over a period of 3 years.

The platform mounted solar panels provide power to the pump beneath the structure which pumps water from the river into the tank. The water is then gravity fed to the surrounding townships.

500 elevated tanks supplied & installed over a 3 year period



# Series 220 Membrane Tank BP 'Spotsdar' Solar Project

CST INDUSTRIES, INC.





# Tank Maintenance



# Low Cost / Longer Life



# FACTORY INSPECTION

All tank liners are inspected prior to shipping. Each liner is inflated in order to check the seams and welds.

The manufacturing area has a clean vinyl flooring, as a further precaution the production team use protective coverings over footwear



# Packaging / Transportation

CST INDUSTRIES, INC.



## Snapshot - Client references:

- 1 x 7,500m<sup>3</sup>. Heavy Fuel Oil Tank for **Lihir Gold Ltd PNG**
- 2 x 1.1MI Potable tanks **C&M Engineering Kiunga PNG\***
- 4 x Potable, fire and irrigation Tanks **Builders Qatar Doha Qatar**
- 500 x Elevated tanks for **Philippines Agrarian Department (with BP Solar)**
- 14 x Desalination Tanks **Southern Seawater Desal Plant for SSWA in Binningup WA\***
- 4 x Sludge Tanks for **Sunset Coast Water Alliance (Water Corp) WWTPs\***
- 1 x Sludge Tank for **W2WA Beenjup WA\***
- 1 x 2.8MI standpipe Reservoir for **Goldenfields Water CC at Temora NSW \***
- 5 x tanks for the **MDA Murrumba Downs WWTP \***
- 1 x 5.4MI for **North East Region Water Authority at Yarrawonga\***
- 1 x 5MI & 1 x 5.7MI for **Berrigan Shire Council NSW \***
- 1 x 8.5MI firewater storage reservoir for **Caltex Refineries Lytton Brisbane.\***
- 9 x tanks for WSN Environmental a **NSW Govt Instrumentality Jacks Gully Camden\***
- 1 x 23Mtr Standpipe **Murray Shire NSW.\***
- 1 x 3MI litre reservoirs & 1 x 10Megalitre **PNG Water Board \***
- 1 x 2MI. Reservoirs in high seismic zone, Lae City. The latter with **S.M.E.C.** and other projects as Head Contractor. **Ausaid overseas projects & local government projects.\***

# Top Town Tanks!

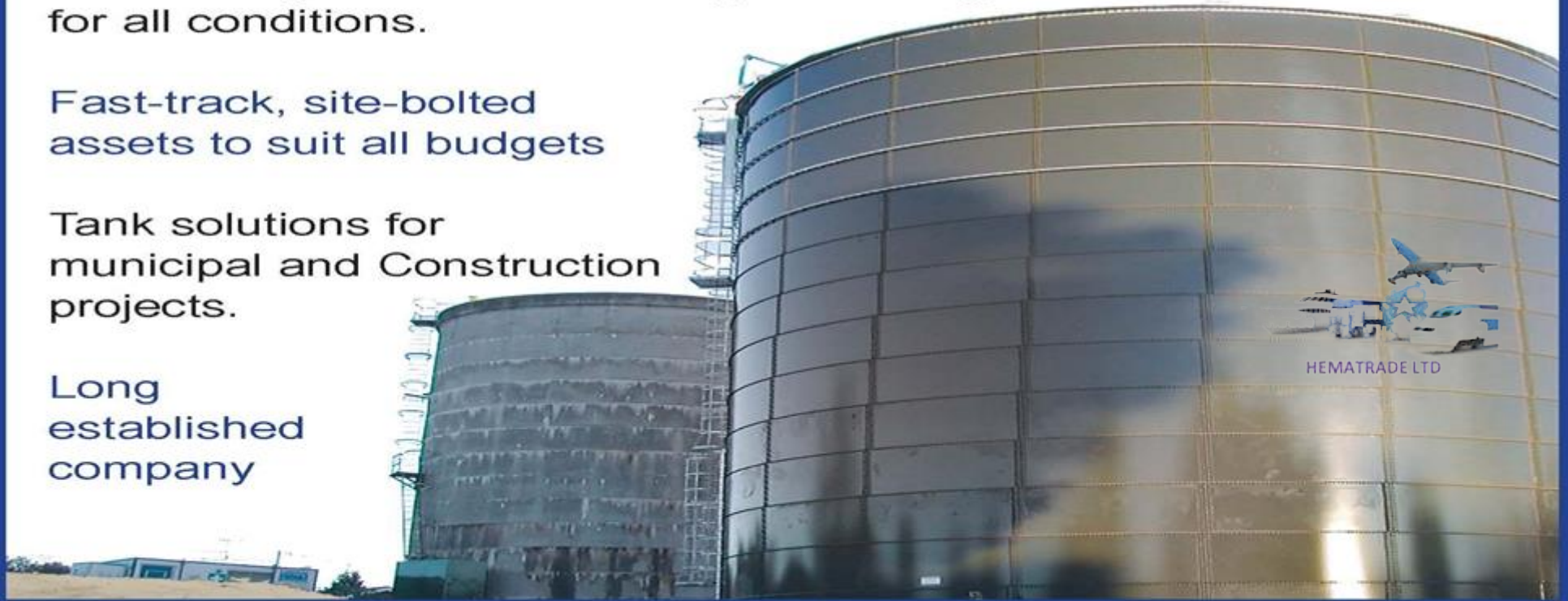
**We design & construct Tanks & Reservoirs for top towns.... all over Australia and beyond!**

Global range of tank technologies & designs for all conditions.

Fast-track, site-bolted assets to suit all budgets

Tank solutions for municipal and Construction projects.

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Integration with solar Pumping solutions is available

