CORPORATE PROFILE

QUALITY
SAFETY
EFFICIENCY

We take pride in our ability to take well-engineered composite components and add value to meet the ever changing demands of industry.

We are VHM Solutions

Services to Industrial, Marine, Offshore and Infrastructure Sectors
Fibreglass Piping Systems
Mine Dewatering & Borefields
Bore Risers and Casings
Anti-Ballistic Composites as Engineered Structures
Composite Structures (Bridges, Boardwalks etc.)
Engineering, Procurement & Construction (EPC)
COMPTECH Composite Tanks
Water Infrastructure & Remediation
Water Treatment Systems
Reverse Osmosis Plant

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- COMPTech Composite Tanks
- Composite Structural Systems
- Turnkey Mine Dewatering and Borefields
- Engineering, Procurement & Construction (EPC)
- Water Infrastructure Remediation
- Water Treatment Systems
- Reverse Osmosis Plant
- Structural Pipe Renewal System
- Advanced Coating System
- Project Pictorial and Brandings
INTRODUCTION

VHM Solution’s management are extensively involved in all aspects of providing water treatment and infrastructure solutions, piping systems and structural composite solutions for the oil, gas, offshore/onshore processing, defence, mining and infrastructure market sectors. Although we specialise in composite and anti-corrosion technology utilising innovative materials, we also cater for traditional material containing packages for a wide and diverse range of process services and applications.

Our experience with composite materials commenced in 1991 and is driven by client demand for solutions to costly corrosion and water treatment issues. This provided the basis for what VHM Solutions is today, the experts in the application of WWTP’s and composite materials for real and beneficial product applications, that save our clients and often the public in millions of dollars per year by way of reducing capital and operational expenditure.

We take pride in our ability to take well-engineered WWTP and composite components (whether that is components for piping, structural or fluid storage) and add value to meet the ever-changing demands of industry.

The management of VHM Solutions Pty Ltd has built a strong reputation for QUALITY, SAFETY and EFFICIENCY of services and products provided. This is reflected by the strength of our client base and the on-going business we experience.
VHM Solutions Pty Ltd is a highly specialized organisation that caters for the composite product needs of the oil, gas, marine, infrastructure and downstream processing industries. We have had a successful on-going relationship with the world’s leading manufacturers of finished piping and structural composite products since 1991.

Our expertise is in the supply, installation and after sales service of fibreglass piping packages, fibreglass grating and structural systems from the largest and most experienced composite manufacturers in the World. Wherever you may be in the Asia-Pacific region, we can provide the specialist technical knowledge, services and equipment required to complete the successful applied composite turnkey contracts in the following areas:

- Offshore Oil & Gas Production: Fixed Oil & Gas Production Platforms, FPSOs and FSOs
- Onshore Oil & Gas Production: LNG Plants, Gas Processing Plants, Refineries and Pipelines
- Mining: Slurry Water Return Pipelines, Mine Dewatering Risers, Borefield Risers
- Sanitation Infrastructure: Aged Deep Sewage Access Pit and Pump Station Remediation
- Civil Infrastructure: Structural Life Extension to bridges, jetties and boardwalks

- Water Treatment Solutions for Developing Countries
- Environmental: Polluted Waterway Remediation; Turnkey Septage Treatment Plants
- Military: Ballistic & Blast Resistant Structures
SERVICES WE PROVIDE

Composite Piping Systems (in accordance with ISO 14692 where applicable)

- Engineering:
  * Site Survey (3D Lazer Scanning)
  * Stress & Surge Analysis
  * Material and Product Selection
  * Custom Pipe Support Detailing (where required)
  * General Arrangement Drawings
  * Isometric Drawings
  * Bill of Materials
  * Shop Spool Fabrication Drawings
  * Site Work Pack Preparation
  * Hydro-static Test Pack Development
  * Mechanical Testing of Materials
  * Application Research and Development

- Supply of fit-for-purpose GRP/GRE/GRVE pipe and fittings from the world’s leading manufacturers.
- Supply and Fabrication of Pipe Supports, Guides and Anchors.
- Installer Training, Testing and Certification to ISO 14692.
- Shop Pipe Spooling.
- Site Installation and Hydro-static Testing.

Composite Structural Systems

Bridges (light traffic and pedestrian), Raised Platforms, Marine Jetties, Boardwalks
  * Engineering (all aspects)
  * Procurement of fit-for-purpose materials
  * Custom Component Manufacture
  * Workshop Fabrication
  * Site Erection

Remediation/Life Extension Of Existing Aging Structures

Degraded Concrete or Steel Structures using composite materials
  * Boardwalks and Pedestrian Bridges
  * Traffic Bridges
  * Jetty Piles and Topside Structures
  * Concrete or Steel Tank Walls
  * Corroded Piping Systems
  * Sewage Access Pits and Manholes
  * Any Chemically and/or Mechanically Corroded Surfaces.
VHM Solutions's revolutionary composite water storage system has been developed using full structural & containment components as being manufactured with the tried and true pultruded manufacturing process. This enables a fully predicable design that meets the harsh conditions experienced on offshore oil & gas facilities while reducing the weight accumulation. This presents substantial operational cost savings by negating the need for planned maintenance and inspection surveillance that is experienced with lined steel tanks.

**Special features of the VHM Solution COMPTECH composite tanks:**
* Light weight
* Square or rectangular footprint that is space saving on an offshore platform
* 50 year design life with no planned maintenance
* Fully conductive for hazardous zones
* Available with capacity from one to thirty cubic metre
* Full composite construction with no metals used for structural integrity
* Structural exoskeleton means maximum capacity available for water storage
* Designed to perform under fire, earthquake and cyclonic conditions.

**Services Offshore our tanks are ideal for:**
* Hazardous Water
* Potable Water
* Wash-down Water
* Tempered Water
* HVAC Accumulation Water

**Services Onshore our tanks are ideal for:**
* Sludge Containment (mining, sanitation, agricultural and industrial)
* High Salinity Water
* Seawater Water
* Deionized/High Purity Water
* Hydrocarbon and Chemical Contaminated Water
COMPOSITE STRUCTURAL SYSTEMS

Since 1956, Strongwell has been manufacturing high quality fibre reinforced polymer (FRP) products using “the continuous automatic process” (today known as “pultrusion”). Today, with three manufacturing locations, 65+ pultrusion machines and more than 645,000 square feet of manufacturing space, Strongwell is recognized as the world’s leading and largest pultruder of FRP.

What is Fiberglass Reinforced Polymer?

Fiberglass Reinforced Polymer (FRP) is most often referred to simply as “fiberglass”. Used in this context, “fiberglass” is a composite consisting of a polymer resin matrix reinforced by embedded glass fibres. The strength of a fiberglass part is determined primarily by the type, orientation, quantity, and location of the glass fibres within the composite.

What is Pultrusion?

Pultrusion is a manufacturing process for producing continuous lengths of reinforced polymer structural shapes with a constant cross section. The process involves pulling the raw materials, a liquid resin mixture and reinforcing glass fibres through a heated steel forming die using a continuous pulling device.

The Features of Strongwell’s Fiberglass Composites:

High Strength - Stronger than structural steel on a pound-for-pound basis. Used for building structures, walkways, platforms, etc.

Light Weight - Strongwell’s fiberglass composite products weigh approximately 75-80% less than steel and 30% less than aluminium. This translates to lower transportation costs, easier installation and less weight in structural designs.

Corrosion Resistance - Strongwell’s proprietary “wet-out” process ensures complete reinforcement saturation. Fiberglass will not rot and is impervious to insects and a broad range of corrosive environments. Strongwell FRP composites have been successfully used for indoor and outdoor applications at hotels, restaurants, chemical plants, water and wastewater treatment plants, and in many other corrosive environments.

Low Conductivity - An excellent insulator, fiberglass has low thermal and electrical conductivity, making it a popular choice in electrical applications.

Electromagnetic Transparency - Fiberglass is transparent to radio waves, microwaves, and other electromagnetic frequencies. Strongwell composite products are regularly used in cellular applications due to this feature.
TURNKEY MINE DEWATERING

The management of VHM Solutions Pty Ltd has combined Australian water handling experience in excess of 30 years utilising high technology composite piping systems. We are the first company in Australia to provide turnkey solutions that utilise advanced, yet cost effective, Glass Reinforced Epoxy (GRE) piping materials in combination with the Client's selected submersible pump/motors.

The GRE piping components are manufactured in this region by the World's largest and leading GRE piping manufacturer. VHM Solutions takes the proven GRE components for risers and combines these with Client's selected submersible pump/motors, and engineers the system to meet the client's performance requirements and environmental conditions while requiring minimum input by the Client.

The well casing can also be a permanent or removable GRE well caisson which gives additional flexibility, especially to the long wall miner as the whole dewatering system can be re-used by moving from one long wall section to another upon completion.

Stability of supply and the quality of our systems means that VHM Solutions are willing to either sell our turnkey dewatering systems on a lump sum basis or negotiate a long term lease arrangement that incorporates a full service agreement providing security of water supply without the mine owner carrying the expertise in-house.
From concept design to finished product we meet and often exceed client expectations by working under best industry practices. Our Engineering and practical expertise can adapt our product and come up with innovative solutions to problems encountered with conventional material. We can perform piping stress analysis, structural calculations and provide full fabrication drawings using leading softwares such as AutoCad, Solidworks, Caesar II, PDS and PDMS.

From pipelines and underground piping services our Civil/Piping Engineers can provide consulting and full range of detail design services.

For unique and novel composite material applications like our water storage Extren tanks for offshore service our structural engineers have the ability and proven experience to design and verify our products performance in exacting service conditions.

As one of the World's most experienced company's in field application of piping & structural composite materials VHM Solutions can provide the engineering your project requires for composite materials.

Working on prominent projects both here and overseas, we have the capability to mobilise and provide end to end solutions for our clients. We have teams of installers that undertake site installation and testing works for composite piping systems that can be mobilised to any location where our services are required. Since 2002, we have completed contracts in all States of Australia, New Zealand, PNG, French Noumea, Indonesia, Thailand, Philippines and Dubai.

Our site teams excel in remote locations and extreme climatic conditions. As required when working in accordance with ISO14692 Part 4, all our QA/QC, Supervisors and Installation Technicians are all accredited to this internationally recognised standard. Safe working practices are always to the forefront in our everyday operations and this has achieved a fantastic on-going record that supports our client’s on-site safety objectives of zero incidents.

We offer our expertise in providing long term maintenance solution to key sectors such as Defence, Oil & Gas and Industrial. GRE is a better and more economical alternative to existing steel piping systems. For Maintenance Managers that have not yet used any GRE systems please contact us and we will be more than happy to discuss with you where GRE will be of benefit to reduce your maintenance costs. Our services are backed by works that can be completed in our workshop situated at 13 Chullora Bend, Jandakot WA.

Where your pipes are leaking or corrosion and may cause a substantial reduction in structural integrity you can call on VHM Solutions and NRI Innovative Composite Solutions to prevent possible unplanned plant shutdown by applying our Syntho Glass pipe integrity restoration system to save the day. NRI have a substantial range of composite wrap systems that cover many types of leaks or failing pipes.

Please contact us to discuss any installation and maintenance requirements you may require.
WATER INFRASTRUCTURE REMEDIATION

VHM Solutions are specialists at providing complete life extension services for aged sewage infrastructure with our proprietary access chamber systems. The below photos show a rectangular deep sewage access chamber installed in the 1950s in Western Australia constructed of bricks and mortar.

The sewer system is sealed and the access chamber suffered severely from hydrogen sulphide (H2S) degradation that attacked the mortar in the walls. This caused a total loss of all structural integrity which in turn threatened complete failure of the access chamber exposing both safety and environmental hazards on top of sewer system failure. Our hybrid composite renewal system retrofits directly inside the existing pit meaning:

- No excavation required;
- No disruption to the surrounding sewage network with timely installation;
- Very little disruption to the property owner;
- Massive cost and time savings compared to demolishing the old pit and installing a new conventional pit;
- OHS benefits to work crews and inspection/servicing personnel;
- Reduced liability of environmental contamination; and
- The new composite retrofit solution will provide a minimum 100 year structural life extension to the access chamber.

VHM Solutions can also develop these composite access chambers for new systems or for total replacement of existing systems.
VHM Solutions are the proud and authorised representatives of HiClear Modular Sludge-free Waste Water Systems. VHM Solutions are HiClear Australia’s preferred supplier and installer for both onshore and offshore applications.

What makes HiClear different?

- **Sludge-free**
  HICLEAR systems produce zero excess sludge. They save the end-user the purchase of maintenance-prone and power draining sludge dewatering equipment such as filter presses. Additionally, no extra space is required for sludge drying beds, or monthly sludge disposal costs — ever!

- **Chemical-free**
  HICLEAR units do not require coagulants (PAC, NaOCl) or chemical cleaning reagents to operate. This also means no chemical dosing pumps, chemical dosing tanks or maintenance-prone mixers. Forget scaling and clogging problems forever.

- **Maintenance-free**
  HiCLEAR’s Plug&Play® type operation allows for same day plant startup without any foaming issues usually faced by Membrane BioReactor (MBR) systems. Maintenance is a breeze with no on-site operator required once the plant is commissioned by our site engineering team.

Above-ground installations

Under-ground installations
TEHO Reverse Osmosis Plant. A reliable reverse osmosis water maker should contain good pre-treatment, conservative design of high pressure pumps and excellent piping design for ease of maintenance. Designed and manufactured with these points in mind, our STS Reverse Osmosis Watermaker delivers more than superior performance and durability, customers benefit from an efficient sales and after sales support from VHM Solutions renowned customer service and technical team. Renowned in Singapore and Southeast Asia with proven track records, STS Reverse Osmosis Watermaker provides solutions for clean potable water both on land and out in the sea.

**Strengths:**
- Driven by more than 10 years of industrial experience and thorough product knowledge, STS Reverse Osmosis Watermaker is designed for stability and consistency in performance.
- Customisation is available for large scale desalination projects.
- Sourced from USA and Europe, only reliable parts are used.
- Competitively priced
- Strong after-sales support on-site for vessels in Southeast Asia region.
- Efficient worldwide delivery and support with offices in Singapore, Rotterdam, North Carolina and Shanghai, and agents in Miri, Jakarta and Batam.

**Features:**
- Available up to 100,000 litres production capacity per day as standard model, higher specification upon request.
- Options of single stage and double stage STS Reverse Osmosis Watermaker.
- Automatic back flushing function
- Durable for 24 hours operation
- PLC touch screen control panel
- Compact design suitable for marine & offshore requirements
VHM Solutions uses the GeoCastTM Pipe Renewal system to rehabilitate and repair existing Corrugated Metal Pipe (CMP), Reinforced Concrete Pipe (RCP), brick pipe, brick manholes, storm water pipe culverts, tunnels and wastewater infrastructure.

As a Sustainable Green Technology the GeoCastTM Pipe Renewal system uses a patented spin-cast geopolymer lining technology. This high performance, fibre reinforced, corrosion resistant mortar is placed by centrifugally casting or using an air atomising shotcrete nozzle to apply the geopolymer liner.

The GeoCast Process

The high performance geopolymer mortar with densified micro silica powder, flyash, pozzolanic materials and other select admixtures is designed for both new and existing CMP, concrete and brick pipes.

GeoCastTM is a proven trenchless technology. The use of Geocast Geopolymer structural linings will reduce service downtime and will rehabilitate existing structures with a design life of over 50 years.

Pre-installation cleaning and inspection is performed to identify pipe material, pipe size, pipe length and defects. High pressure water blast at minimum 4000psi is required for adequate removal of rust, dirt and laitance.

All active water leaks and infiltration is plugged and patched with Custom Plug® hydraulic cement. Chemical grout injection or flowable fill grout pumping may be used for filling large voids around pipe.

Depending on the pipe size and configurations, use either the GeoCastTM Pipe Renewal spin-cast head and sled or a low pressure, air atomising, wet shotcrete nozzle for applying a monolithic, geopolymer line

- Increase strength by over 100%
- Fast turnaround Anti corrosion – acid resistant
- Early strength and long term durability
- Proven for over 25 years
- Tenacious bond & low permeability
The Hychem TL5 epoxy Advantage. Hychem international is an Australian formulator and manufacturer. The Hychem TL5 coating is specifically designed to offer a long term and fast turnaround for all water assets requiring rehabilitation or prevention of corrosion. Protection suited to most water industry structures within the network or facilities across a range of substrate types.

Hychem & VHM Solutions can offer long material warranties of 10+ years. The expected design life based on actual case history is 25+ years.

National Industry Standards
- Many approvals through numerous water authorities and councils.
- TL5 approval by SA water through several manhole trials in Adelaide and long term product immersion test.
- Hychem TL5 will conform to the application guidelines set out by Water Services Australia Manual for selection and application of protective coatings WSA 201. TL5 will satisfy the requirements of EUH Epoxy Ultra High Build 5.13.
- Sydney water approval of Hychem TL5 is documented on the Sydney supplement to the WSA 201.
- Hychem TL5 is AS4020 potable water certified.
- University of Technology Sydney passed TL5 for Sydney water Specification 204(sulphuric acid test, thermogravimetric test, infrared spectroscopy, bond strength).

Hychem TL5 highlights summary
- Expert product knowledge and application through collaboration with skilled contractors
- 20 year case history on Australian water assets
- Specifically designed for the water industry
- Manufactured in Australia, supported by technical staff
- 10 year material warranty
- Non sacrificial
- Gloss finish = high flow rate, less friction
- High acid resistance
- High caustic resistance
- Bonds to damp concrete
- High build application in one session
- High impact strength
- Fast return to service (6–8 hours possible)

Hychem TL5 is applied by specialist equipment and contractors.