



TERRAVUA

**BUILT ON CHANGE
POWERED BY CONNECTION**

TITANTUBE® DEWATERING TECHNOLOGY

High-performance engineered
geosynthetics and systems for
civil, environmental and water
management applications.



THE LOW COST, HIGH VOLUME DEWATERING SOLUTION

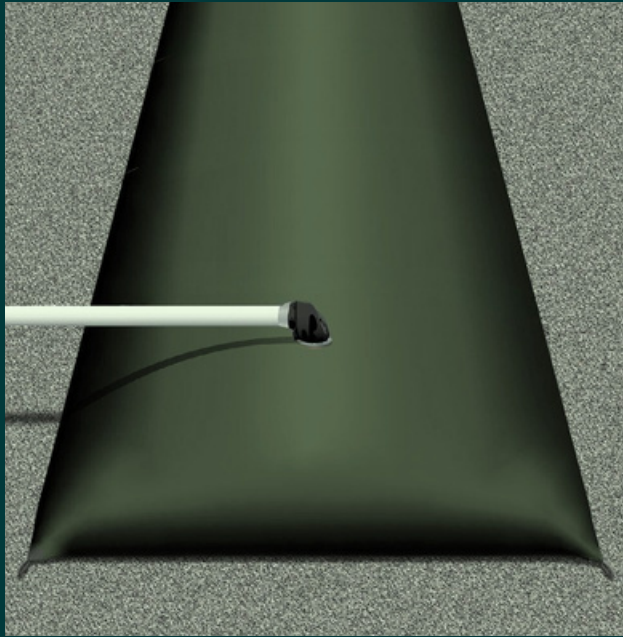
Geotextile tube dewatering has become a proven, preferred solution for organisations worldwide. It is used successfully across both small and large-scale projects due to its operational simplicity, scalability, and cost-effectiveness.

Unlike many mechanical dewatering systems, geotextile tube solutions have no complex belts, gears, or high-maintenance moving parts. Tube sizes are selected to suit your sludge volumes, solids loading, site footprint, and project requirements, making the system highly adaptable to different applications.

Geotextile tube systems can also be integrated into mobile roll-off container setups, allowing the dewatering solution to be relocated around site as operational requirements change. This makes the system a highly versatile option for facilities needing flexible deployment.

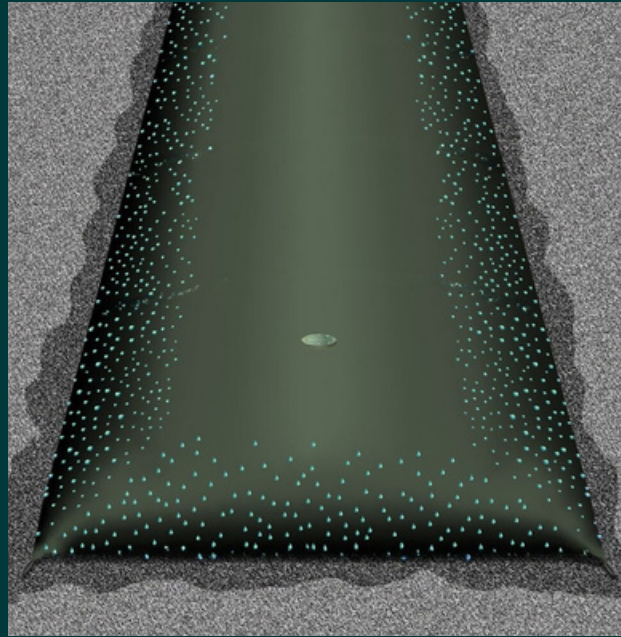
In addition to mobility, the technology delivers strong dewatering performance, with volume reduction of up to 90% in many applications. The result is a higher solids content, making sludge handling, removal, transport, and disposal significantly easier and more cost-effective.





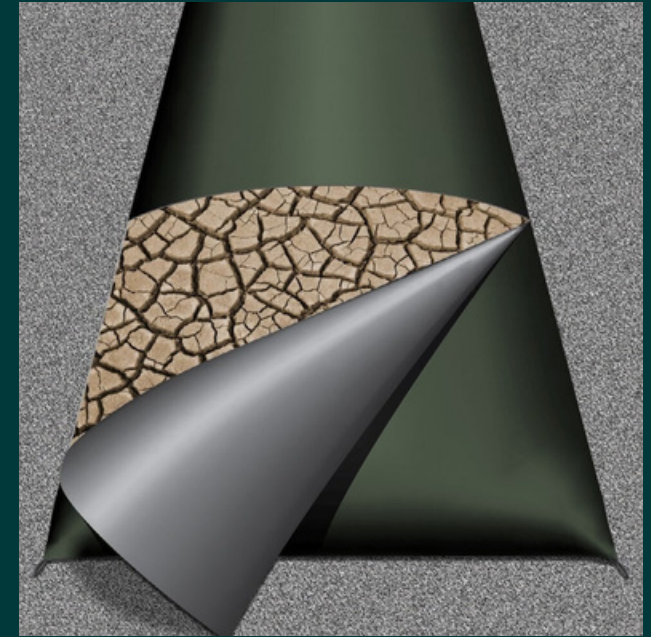
1. FILLING

Sludge is pumped into the geotextile dewatering tube, while a suitable polymer is dosed into the feed stream to improve flocculation. The polymer helps fine solids bind together into larger particles, allowing water to separate more effectively during the dewatering process.



2. DEWATERING

As the tube fills, water drains through the geotextile fabric while the flocculated solids are retained inside. This dewatering stage produces a clear filtrate that can be collected and, where suitable, recirculated back into the process. The system is designed for high solids capture efficiency (typically over 99%, depending on sludge characteristics, polymer selection, and operating conditions).



3. CONSOLIDATION

Solids remain in the geotextile tube and continue to consolidate as water drains. This can achieve volume reduction of up to 90% (application dependent). When full, the tube can be removed for disposal, or the dewatered solids can be removed for landfill or approved land application.

ENGINEERED ENVIRONMENTAL REMEDIATION SOLUTIONS

Engineered Containment Solutions for Large and Small-Scale Projects

Rivers, bays, harbours, marinas, ports and dock facilities often accumulate contaminated sediments over time due to industrial runoff and other upstream sources. These sediments can present significant environmental risk, while remediation is frequently complex, costly, and logistically challenging.

Geotextile tube dewatering provides a practical solution for the containment and dewatering of contaminated marine sediments, allowing treatment to take place on-site or close to the source area. By using a dedicated dewatering basin, geotextile tubes can be installed and stacked in multiple layers (where design conditions allow) to optimise the available footprint and improve site efficiency.

Geotextile tube systems can be sized for both large-scale and smaller applications, providing a flexible containment and dewatering solution across a wide range of project requirements.

They can also be used in appropriately engineered applications to contain and dewater challenging materials, helping to significantly reduce volume and lower transport and disposal costs.



CASE STUDY

Application | 37000m³ of sand and silt to be removed from a creek to avoid flooding

A canal restoration dredging program required an efficient way to handle large volumes of sand and silt while reducing disposal costs and improving water management. The site implemented a three-stage dewatering process to separate solids, recover water, and streamline residual waste handling.

Dredged material was pumped from the canal to a treatment area, where the first stage removed larger debris and coarse material. The slurry then moved through a separation and clarification process, where polymer-assisted treatment improved solids settling and handling. In the final stage, remaining fines were directed into high-capacity dewatering units for further water release and solids containment.

Recovered water was routed back through the system for controlled discharge, while separated solids were managed for transport and disposal. The staged setup improved process control, reduced the burden on disposal operations, and enabled continuous dredging activities with better overall efficiency.

This project demonstrates how a structured, multi-stage dewatering approach can effectively manage dredged sediments in confined sites while improving throughput, water recovery, and operational reliability.



Dewatered sludge being removed from a Titan tube®

PULP AND PAPER

Versatile Dewatering and Containment Solutions

Geotextile tube systems provide a versatile dewatering and containment solution for multiple pulp and paper mill applications, including:

- Lagoon cleanout (primary and secondary)
- Fly ash, alum sludge, and similar residuals
- Contaminated sediments
- Continuous process streams (e.g., clarifier sludge, centrate, and process waste streams)
- Process rejects
- Separation dikes / temporary containment structures
- Emergency response and upset conditions, including spills, cleanouts, dump incidents, and discharge limit exceedances

Rapid deployment is a key benefit of geotextile tube dewatering in pulp and paper environments. This is particularly valuable during emergency events, where fast implementation can help prevent operational disruption and potential mill shutdowns.



CASE STUDY

Application	Dewatering of Palm Oil Mill Effluent Sludge
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A palm oil processing facility implemented a contained geotextile dewatering solution to remove accumulated sludge from its wastewater treatment ponds and restore effective treatment capacity. Over time, sludge build-up in the pond system had reduced available volume and placed pressure on overall effluent management performance.

Sludge was pumped from the ponds into enclosed dewatering units, where the liquid phase drained through the fabric and was returned to the treatment process, while solids were retained for gradual consolidation. This allowed the sludge to dewater into a more manageable material for removal and disposal/beneficial use.

The project demonstrated a practical, low-footprint desludging approach that improved pond performance, reduced operational strain, and supported more consistent wastewater treatment operation.



Sludge before Titan tubes were placed on site for dewatering

MINING AND MINERAL PROCESSING

Flexible Solutions for Constrained Site Footprints

Mine tailings, coal sludge, and other mineral processing slurries can be dewatered cost-effectively using geotextile tube systems.

Tubes are sized to suit the application and available footprint, allowing installation in constrained spaces and removal after dewatering.

The system is a practical alternative to mechanical dewatering, delivering higher solids consolidation with low maintenance. It can be fed directly from process streams or from clarifier/thickener underflow, and may also be used to capture fines, silts, and clays before discharge (subject to site and regulatory requirements).

Systems can be configured for:

- Direct process feed
- Clarifier/thickener underflow diversion
- Fines capture from tailings-related effluent streams

Geotextile tube units provide effective separation and dewatering of fines, reducing the volume of material requiring transport and disposal and, in some applications, lowering dredging and handling costs. Where required, conditioners and/or polymers are introduced to promote flocculation and improve both solids capture efficiency and filtrate clarity.

In suitable applications, the dewatered fines may also be used in the construction of containment berms or dike structures, subject to geotechnical design requirements and material performance criteria.



CASE STUDY

Application	Coal screening and washing facility sludge dewatering
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A coal processing site deployed a flocculant-assisted, geotextile-based dewatering system to treat fine coal sludge and improve waste handling. Slurry was conditioned for solids capture, with retained solids consolidating in the dewatering unit while clarified filtrate was collected for recovery and re-use. The installation included a prepared drainage and containment area for controlled operation. The system reduced disposal volumes, improved water management, and enabled high process water recovery.



Sludge from a coal wash plant to be dewatered in Titan Tubes

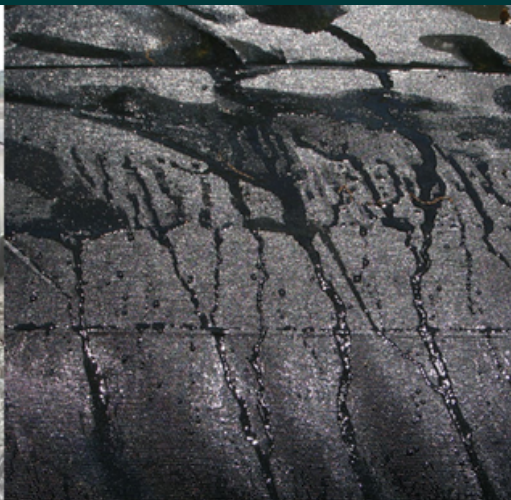
POWER GENERATION

Engineered Solutions for Fly Ash and Bottom Ash

Fly ash and bottom ash management can present significant handling, storage, and disposal challenges for power generation facilities. Geotextile tube dewatering offers a practical consolidation method that can be scaled to suit site volume requirements and adjusted as operating conditions change.

Geotextile tube dewatering systems provide effective containment of fly ash, helping to reduce the risk of airborne particle release from exposed ash stockpiles. Once dewatered and handled appropriately, the material may be suitable for reuse in applications such as road base, or for use in berm construction around lagoons to increase storage capacity (subject to design requirements and local regulations).

In many fly ash applications, polymer addition may not be required, which can simplify operation and reduce treatment cost.



Geotextile tubes used for
ash dewatering

WATER AND WASTEWATER TREATMENT

Engineered Solutions for Large and Small-Scale Applications

Geotextile tube dewatering technology is widely used in water and wastewater treatment applications, including lagoon, tank, and digester cleanouts. It provides dewatering and containment in a single operation, helping facilities manage sludge efficiently while reducing handling and disposal volumes. In suitable applications, geotextile tube systems can also improve effluent quality, with performance dependent on sludge characteristics, polymer selection, and operating conditions.

The system can be used seasonally or as required, with retained solids stored on site between operating cycles where site conditions and management plans allow. It is effective across a range of sludge types, including fine-grained sediments, and dewatered solids can be directed to landfill disposal or approved land application (subject to testing and regulatory requirements).

Geotextile tube systems are also well suited to septage handling, whether at private receiving stations or municipal facilities.

Units are available in a range of sizes to suit site layouts, including options sized for drying bed installations and mobile configurations designed for roll-off container systems for added operational flexibility.



CASE STUDY

Application	Municipal WWTW Sludge management
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A municipal treatment site implemented a pilot-scale, contained sludge dewatering system on an existing drying bed slab to improve sludge handling and verify performance under live operating conditions. The installation included a controlled tie-in to the sludge line, valved flow-routing pipework, and polymer dosing for consistent flocculation and filtration behaviour. The pilot achieved stable operation with clear filtrate, repeatable pumping cycles, and predictable drain-down between fills. Following commissioning and operator training, the system was handed over as a practical, scalable approach to improving drying bed performance and ongoing sludge dewatering reliability. Terraviva - Municipal waste slud...



Titan tube demo unit after dewatering cycle of 2 days ready for more cycles

LIGHT INDUSTRIAL

Engineered Solutions for Ongoing Sludge and Solids Management

For many light industrial operations, sludge dewatering is an ongoing requirement. It can interrupt production, increase operating costs, and often depends on complex, expensive equipment. Geotextile tube dewatering provides a simpler, more flexible alternative. It can be deployed for rapid lagoon cleanouts or used to increase effective treatment capacity by improving the performance of existing drying beds.

In some applications, facilities have dewatered lagoon material using geotextile tube systems and then used the filled tubes as part of berm or containment works to help expand lagoon capacity (subject to design requirements and site approvals).

Dewatering efficiency can be improved because geotextile tubes protect retained solids from re-saturation during wet weather. This helps maintain dewatering progress and reduces the impact of rainfall on sludge handling and storage.

Where site conditions and design allow, geotextile tubes can also be stacked in multiple layers to increase capacity and make better use of limited footprint.



mini tubes applied for smaller dewatering applications

AGRICULTURE

Ideal for Swine, Dairy, Poultry and Other Agricultural Applications

Geotextile tube systems are used in agricultural waste management applications, including CAFO lagoon cleanouts and lagoon closure projects. The technology provides containment and dewatering in a single process, improving solids handling and supporting nutrient reduction strategies as part of a broader waste management plan. System performance (including nutrient reduction, odour control, and filtrate quality) is application dependent and should be validated through site-specific testing and operating conditions. Regulatory acceptance, reuse options, and any available funding support vary by country and programme.

Geotextile tube dewatering systems can also be configured inline, allowing solids to be captured before they enter the lagoon. This helps preserve lagoon capacity for water storage (such as irrigation use) rather than long-term solids accumulation that must be managed later. The system can be integrated into existing operations with minimal disruption, supporting ongoing site activity while dewatering takes place.



Titan tube technology applied for agricultural waste in a hog waste application

AQUACULTURE

Simple, Cost-Effective Waste Removal for Large and Small-Scale Applications

Geotextile tube dewatering provides an effective solids management solution for aquaculture operations, including freshwater and marine systems for fish, shrimp, and other aquatic species. It supports improved water recirculation by removing suspended solids and can achieve high solids capture efficiency (typically >99%, application dependent).

The system can also assist in reducing nutrient loading in the filtrate and may be operated continuously or intermittently, depending on the facility's process requirements. It is well suited to applications such as lagoons, retention ponds, and filter waste streams.

Applications include cage waste removal, benthic table waste clean-up, hatchery recirculation waste removal, and processing plant waste dewatering. Dewatered solids can be directed to land application or landfill disposal, subject to testing, site requirements, and local regulatory approval. Geotextile tube dewatering technology has been evaluated in both research programmes and real-world operating environments. More importantly, it has a strong track record of practical field use, where reliable solids capture and dewatering performance are critical to day-to-day operations.



TEST YOUR MATERIAL

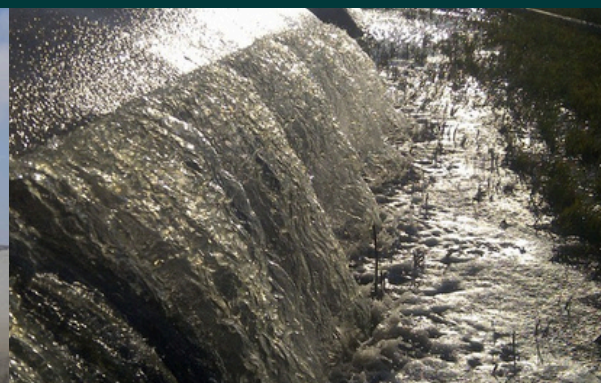
A simple bench-scale test can quickly determine whether geotextile tube dewatering is suitable for your application. Terravua's dewatering assessment uses an actual sample of the material to be treated, allowing us to evaluate how the system is likely to perform under site-relevant conditions.

This testing provides a practical basis for estimating:

- filtrate / effluent quality
- expected dewatered solids concentration
- dewatering behaviour and indicative rates

Bench-scale testing is an important step in selecting the right approach, polymer programme, and system configuration before full-scale implementation.

Contact Terravua to arrange testing on your material sample.



Titan tube dewatering

Practical by Design

To schedule a site visit or in-house learning session:

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ABOUT US

Terravua delivers engineered geosynthetic and dewatering solutions for civil, environmental, mining, and industrial applications across Southern Africa. We focus on practical, site-ready systems that help clients contain, dewater, protect, and optimise critical infrastructure and waste management operations.

Our approach combines global technology partnerships with local technical support, design input, and implementation expertise, allowing us to provide solutions that are both technically sound and commercially practical. From sludge dewatering and containment to remediation and specialist geosynthetic applications, Terravua supports projects with a strong focus on performance, reliability, and long-term value.

We work closely with clients, consultants, and contractors to deliver fit-for-purpose solutions built around real site conditions, operational demands, and project objectives.

UNCOMPROMISED QUALITY

Quality is built into every solution we deliver. Our products are sourced and manufactured to strict international standards, with testing and verification carried out in accredited laboratory environments to confirm performance and consistency.

We support our clients and partners with access to a broad range of testing in accordance with recognised published standards, helping ensure that materials delivered to site meet the specified project quality requirements.

Terravua and its product supply partners do not act as the project design professional or engineer of record unless specifically appointed in writing to do so. Product supply and technical guidance do not constitute project-specific engineering design, and no representation is made that supplied materials automatically comply with any particular system design, project plan, specification, installation method, or end-use application. It remains the responsibility of the project owner, engineer, and/or appointed design professional to confirm suitability, design compliance, and specification alignment for the intended application.

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