

 **TENCATE**  
**Geotube**

Dewatering Systems



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# THE LOW COST, HIGH VOLUME DEWATERING SOLUTION

Geotube® dewatering technology has become the method of choice for organisations around the world.

It is used for projects large and small, and there's good reason; simplicity and low cost.

Since Geotube® dewatering technology works without belts or gears, there are fewer moving parts, less wear, less downtime and fewer spare parts than in conventional techniques.

Geotube® containers are available in a variety of sizes, depending on volume and space requirements. Geotube® systems can even be mounted in mobile roll-off containers for transporting as necessary. It's one of the most versatile dewatering technologies available, and therefore one of the most effective solutions.



Sludge before (left) and after (right) treatment with Geotube® dewatering technology.

Volume reduction can be as much as 90%, with high solid levels that make removal and disposal easy.



## 1. Filling

Sludge is pumped into the Geotube® container. Environmentally safe polymers are added to the sludge, which make the solids bind together and water separate.



## 2. Dewatering

Clear effluent water simply drains from the Geotube® container. Over 99% of solids are captured, and clear filtrate can be collected and recirculated through the system.



## 3. Consolidation

Solids remain in the bag. Volume reduction can be up to 90%. When full, the Geotube® container with its contents can be deposited at a landfill, or the solids removed and land-applied when appropriate.



## WATER AND WASTEWATER TREATMENT

### FOR APPLICATIONS LARGE AND SMALL

A common problem at small Sewage Treatment Works, where sludge is dried on drying beds, is that the limited capacity of the beds can easily be exceeded. This could be due, for example, to an increase in sludge quantity resulting from an increasing population.

The Geotube® system is increasingly being used as a means of both simplifying the sludge dewatering process and effectively increasing the volume of the drying beds. Whereas in the past the drying beds had to be emptied at regular intervals, the time for a complete fill of the Geotube® unit can be increased to several months.

A significant saving can therefore be made in terms of handling and transportation.

After the sludge has been treated with a flocculant it is pumped into the Geotube® unit where the sediments remain and the water seeps through the pores of the tube. This process can be repeated until the Geotube® unit reaches its maximum level.

Larger Wastewater Treatment plants can utilise the Geotube® system for sludge containment and dewatering as an alternative to belt-presses and/or centrifuges. It can also be used as an emergency kit if the available dewatering units are out of order.



Geotube® unit in municipal wastewater treatment drying beds.

## MINING AND MINERAL PROCESSING

### FLEXIBLE TO AVAILABLE SPACE

Mine tailings, coal sludge, and other materials can be managed and handled cost-effectively with Geotube® dewatering technology. Because Geotube® containers can be custom-sized to the application, they can be placed in available space between other structures, and removed once dewatering is complete. Geotube® dewatering technology is a cost-effective alternative to mechanical processes. It reduces disposal cost by consolidating higher solids with very little maintenance.

Effluent can be pumped directly from the process; or if a clarifier/thickener is used, effluent from the underflow can be diverted through the Geotube® container, eliminating the need for an expensive mechanical dewatering device. Geotube® units can be used to capture fines, silts, and clays from the tailings effluent prior to discharge into the ponds or directly into streams. Geotube® units will separate and dewater the fines and allow disposal without expensive dredging and transporting operations. In some cases, conditioners or polymers are used to promote flocculation to improve solids retention and filtrate quality.

Geotube® containers can also be used to utilise the fines to build dykes and containment berms.



Coal sludge dewatering using Geotube® dewatering technology

## PULP AND PAPER

### MULTIPLE USES

Geotube® dewatering technology is used for a variety of applications within pulp and paper mills, including:

- Primary and secondary lagoon cleanout
- Fly ash and alum sludge
- Contaminated sediments
- Continuous systems clarifier, sentrate, process waste stream
- Process rejects
- Separation dykes
- Emergency uses, such as cleanouts, spills, dumps, or exceeding discharge limits.

The rapidity with which a Geotube® dewatering operation can be set up, as well as the low investment involved have been advantages in paper mill applications, particularly in emergency situations where mills ran the risk of having to shut down.



Geotube® containers in activated sludge basin at paper plant

## POWER GENERATION

### A SOLUTION FOR FLY ASH AND BOTTOM ASH

Power generation by-products such as fly ash and bottom ash can be a real challenge to remove and manage. The simple technology of Geotube® dewatering allows facilities large and small to easily consolidate these materials. Because of the low investment involved the volume can be adapted as required.

Geotube® dewatering technology safely contains fly ash, preventing airborne particle contamination from windblown ash piles. The ash can then be used for road base applications or even to build up the berms around a lagoon to increase its capacity. In many fly ash operations, there is no need to add polymer to the dewatering process, making it simple and even more cost-effective.



Geotube® containers at fossil fuel power plant being used to dewater fly ash.

## ENVIRONMENTAL REMEDIATION

### EFFECTIVE CONTAINMENT FOR LARGE AND SMALL-SCALE PROJECTS

Rivers, bays, harbours, marinas, ports, and dock facilities have been collecting contaminated sediments from industrial runoff for many years. In many cases, these sediments pose significant environmental hazards, and remediation is a difficult and expensive task.

Marine sediments can be contained and dewatered easily with the Geotube® dewatering technology. This can be accomplished at or very near the site by utilising a dewatering basin where Geotube® containers can be stacked several layers high to minimise the space needed.

Geotube® units can be sized for large-scale or smaller applications, and effectively contain even hazardous materials, reducing their volume dramatically and saving thousands in disposal costs.



Geotube® containers prevent contaminated run-off from entering the local lake.

## AQUACULTURE AND AGRICULTURE

### SIMPLE, COST-EFFECTIVE WASTE REMOVAL FOR APPLICATIONS LARGE AND SMALL ALL OVER THE WORLD

Geotube® technology is used all over the planet. In the USA it has even been approved as a Best Management Practice for Aquaculture by the State of North Carolina. Geotube® dewatering technology works for fresh water or marine finfish, shrimp, and other aquatic species. It simplifies the process for water recirculation, and retains more than 99% of suspended solids.

Geotube® dewatering technology reduces nutrient loading in filtrate. It can be used continuously or intermittently year-round in most climates. It is ideal for lagoon, retention pond, and filter waste applications. It can be used for cage waste removal, benthic table waste cleanup, recirculation waste removal for hatcheries, and processing plant waste dewatering. Dewatered solids can be land applied or disposed of in a landfill.

In agriculture, it's an effective way for managing waste from animal feeding operations. It works for lagoon cleanout and closure, and manages nutrients effectively (over 90% phosphorous and heavy metal removal; 50% or greater nitrogen reduction). It also controls odour and produces irrigation quality effluent water. Large scale plantations like palm oil, etc. have on-site integrated processing facilities which generate significant quantities of effluent wastes that are digested in lagoons and dewatering. The dewatered biosolids can be composted for use as fertilisers in the plantations.



Geotube® dewatering technology has been used successfully in the field in many countries.

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