

In-Barge Dewatering Application Offers Innovative Solution Where Lay Down Area Is Unavailable

Tight space constraints are solved by customized Geotube® units in floating barges.

Geotube® dewatering technology has been used to deliver high performance solutions all over the world in more than 50 countries. Over 2,000 dewatering projects have taken advantage of Geotube® containers since 1991. These have involved both small and large situations for lagoon cleanout, dewatering process waste, and even environmental remediation.

TenCate™, manufacturer of Geotube® materials, develops and produces materials that function to increase performance, reduce cost, and deliver measurable results by working with our customers to provide advanced solutions.

Land-based Geotube® systems have been very effective in reducing the volume of collected materials by as much as 90 percent. The remaining solids can be buried on site or disposed of in landfills.

New Challenge and Creative Solution

A New York City power generating plant faced a difficult problem. Sitting on the East River in Brooklyn, the plant's cooling water intake tunnel was clogged with years of silt from the river. Limited access and workspace complicated this tricky situation. The plant had no available land at their location to serve as a dewatering cell. Traditional methods had been slow, costly, and created effluent water that clouded the river with silt from the dewatering efforts.

TenCate™ proposed a new solution — one the plant's owner was skeptical of at first. This plan required only four Geotube® containers to be placed in two barges in the East River. The 50' x 140' barges were anchored adjacent to the plant above the silt-clogged intake tunnel.

"This in-barge dewatering application is a great example of TenCate™'s philosophy of providing our customers with problem-solving solutions," said Mark Gunzenhauser, Vice President Sales - Geosystems. "This involved a brand new way of creating a dewatering cell."



This aerial photo of New York City shows the crowded landscape of the power generation plant. For this innovative dewatering operation, Geotube® units were installed in two floating barges on the East River (inset photo).

Using 6-inch suction lines, divers went underwater in the confined tunnel to remove and collect the silt that was then pumped to the SmartFeed® system, a technology that chemically conditions sediment to enhance dewatering and tracks production and process parameters. From there the sediment was pumped to the Geotube® units placed in the barges. As the silt dewatered within the Geotube® containers, filtered effluent water

drained into the hold of the barge. From there it was pumped back into the East River without any secondary treatment.

Polymer Mix Plays Key Role

An important component of the Geotube® system is the evaluation of an appropriate polymer program using the TenCate™ RDT Rapid Dewatering Test and the TenCate™ GDT Geotube® Dewatering Test to optimize the dewatering process.



Two layers of custom-sized Geotube® units were stacked in each of the two barges.

"The right polymer mix program greatly improves the efficiency of the dewatering stage," explained Vicki Ginter, TenCate™ Market Manager. "This project involved a constantly changing level of silt solids and flow — ranging from 4% to 11% solids and from 400-1,500 gpm. Careful monitoring was needed here. We worked closely with Mineral Processing Services, our installation specialist, and their SmartFeed® chemical conditioning system."

(More)

As the silt was removed from the intake tunnel, it was first pumped to a SmartFeed® mobile chemical feed system where an automated polymer mixing system injected the polymer into the slurry before it was pumped into the Geotube® units.

Taking place at real-time dredging rates, the SmartFeed® system monitored changes in solids and flow. It tracked the real-time performance data and adjusted polymer injection to the optimum level every 15 seconds. The computer-controlled polymer dosage system injected the slurry through an in-line regulated mixing chamber to insure proper flocculations. This maintained the customer's permit requirements for solids consolidation and effluent water quality. This polymer mixing with the collected silt sped up the dewatering process and improved the clarity of the effluent water.

The power plant was especially pleased with the effluent results. A representative remarked: "Any environmental concerns evaporated when we saw the water solids separation process continue in the Geotube® units. It became clear that the effluent water was much cleaner than the natural water of the East River." And, the SmartFeed® daily process records proved it.

The Results

Within 45 days, 67% dry solids were achieved. This was a significant reduction in silt volume. It was reduced from an estimated 52 non-dewatered barges to less than one barge of dewatered solids. At the end of the job, the Geotube® units were opened and the solids were removed from the barges. The dried contents were hauled to an EPA-approved landfill in New Jersey.

This project was deemed a resounding success and it exceeded expectations in all respects. As a result, the power company used the same method for a second facility and approved the barge-mounted Geotube® process for its future dewatering specifications on similar cleanout projects.

For More Information

This barge-mounted Geotube® dewatering plan has many other applications for industrial dredging and dewatering where space is limited. Other applications include aquaculture, lake residential property, resort areas, and other projects requiring high-quality effluent water from sediment or waste removal.



Silt concentrations were required to be regulated and maintained accordingly for this project. The SmartFeed® patented mobile chemical feed system provided automated polymer mixing injection to the silt prior to it reaching the Geotube® units in the anchored barges.



Effluent was clean enough for direct discharge to the East River without any additional treatment.



The recovered materials dewatered to 67% dry solids.

A TenCate™ representative can work with an organization to administer a small-scale test to evaluate material and to provide recommendations for the best use of the barge-mounted Geotube® dewatering technology. To learn more, call 1-888-795-0808 or visit online at www.geotube.com.

How Geotube® Dewatering Technology Works

Dewatering with Geotube® technology is a three-step process.

In the **filling** stage, the Geotube® container is filled with dredged waste materials. The Geotube® container's unique fabric confines the fine grains of the material.

In the **dewatering** phase, excess water simply drains from the Geotube® container. The decanted water is often of a quality that can be reused or returned for processing or to native waterways without additional treatment.

In the final phase, **consolidation**, the solids continue to densify due to desiccation as residual water vapor escapes through the fabric. Volume reduction can be as high as 90 percent.



Step 1: Filling



Step 2: Dewatering



Step 3: Consolidation

SmartFeed® is a registered trademark of Mineral Processing Services, LLC, S. Portland, Maine.
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