



ACETube[®]



ACE Geosynthetics



Discover ACE Geosynthetics

Since established in 1996, ACE Geosynthetics Enterprise Co., Ltd. has grown into the leading “Geogrid” and “Geotextile” supplier in Taiwan. We not only provide the most comprehensive range of Geosynthetic materials but also actively participate in national and international working groups and research committees.

Excellent staff assistance

The best performance of ACE team work becomes a distinctive characteristic, which makes ACE a big difference. Our engineers provide the most economical and professional solutions to all inquiries.

Perfect durability product

Since our organization grows with participation of outstanding and proficient staffs, all our products achieve the satisfaction of clients by offering the prime and durable materials to elevate the structure safety and extend the service life. In order to meet the requirement of our customers, ACE Geosynthetics offer customized design in products, provides the structure analysis and offers the engineering consultation and evaluation.

Top quality with durable products and customer-oriented service are the keys which lead ACE Geosynthetics to expand the markets rapidly and globally. Within ACE, you can always find the answers to diverse engineering applications.



ACETube[®] is seen as one of the most effectual manners to maintain an environmental and ecological friendly scenario while more and more engineers pay highly attention to Nature-Working-Method. ACETube[®], an edges-and-ends sewn flexible configuration, is integrated with single or multiple pieces of high-strength polypropylene or polyester synthetic fabric and is theoretically applicable to diverse dimensions. ACETube[®] industrial fabric technology acts as the professional aid in the marine and environmental engineering, thanks to various and functional geotextile from ACE Geosynthetics.

Taking the advantage of the structure flexibility, ACETube[®] can easily adapt to various landforms, field conditions, and sewage treatment plants as well. Despite sand or mortar filled ACETube[®] is taken as semi-permanent structure in the marine engineering applications, ACE Geosynthetics never stops developing better quality ACETube[®] to prevent harmful damage caused by human beings, natural disasters and to furnish the Earth with one of the top environment protectors!



We do ACE right !

Quality and Service

• *Material*

Strict incoming raw material inspection is executed daily. ACE truly believes the quality consistency must be commenced from the raw materials. Focusing upon the promised specifications and quality, ACE's duty is to seek and select the premier materials for manufacturing.

• *Manufacture*

ACE has the most experienced technician team working in 3 shifts to take care of the entire manufacturing processes. To keep sharpening our manufacturing skills and studying means to advance the quality of products are the foremost missions of our crews.

• *Fabrication*

Besides good quality ACETex®, the sophisticated fabrication work grants added values to ACETube®. With decades of experience, the fabrication team has actualized the well-organized and efficient operation procedures. By means of standardized behavior, ACE can supply first-rate products.

• *Quality*

ACE Geosynthetics has secured ISO 9001 certification. To achieve our high manufacturing quality control standards, intensive quality control process during manufacturing is practiced by professional QA & QC engineers. Moreover, we cooperate with accredited independent laboratories to prove our quality stability. ACE is deeply devoted to achieving high manufacturing quality to supply excellent product for our clients.

• *Design*

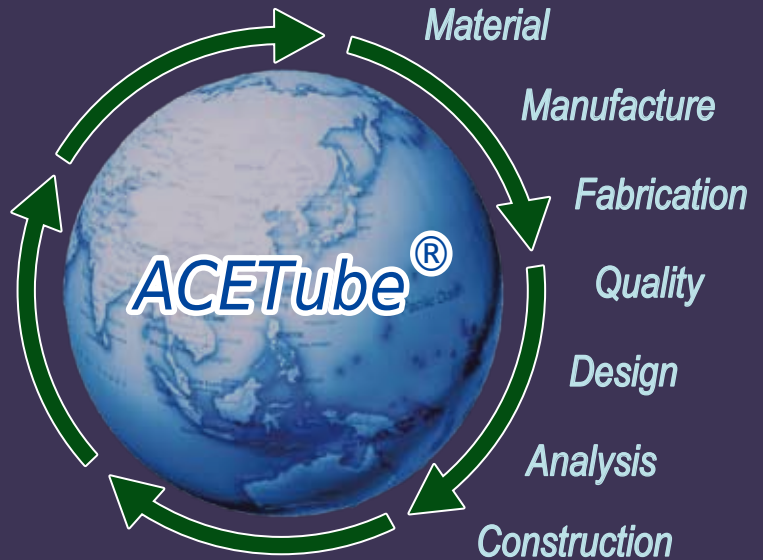
To assure our clients of the best service, ACE counts on a team of professional engineers to provide the most economical and efficient solution to fulfill the client's need. We can give the most suitable suggestion on product application and provide the design proposal for our clients.

• *Analysis*

ACE can not only offer the design assistance but also do analysis by independent professional software, such as MSEW, ReSSA, ReSlope, Stedwin, GeoCoPs, etc., to examine the stability of designed structures.

• *Construction*

To provide exhaustive services, ACE team renders the consultation on construction. Project installation plan and installation checking list could be available. Even more, we can send our engineers to the client's job sites to do construction assistance.





Marine and Hydraulic Application

• Shoreline Protection

ACETube[®] industrial fabrics technology can definitely stabilize as the natural barrier such as sand dune, revetment, and embankment. Using ACETube[®] is a very cost-effective and efficient construction method for rapid coastline reconstruction and restoration.

• Beach Nourishment

ACETube[®] can be designed as submerged breakwater, groin, artificial reef. By means of ACETube[®] taken as submerged breakwater, the wave scouring and sand loss situation could be diminished.



• Land Reclamation

ACETube[®] creates a natural habitat or an entirely new land by way of a cofferdam. ACETube[®] can be stacked several layers to reach the elevation necessary for backfilling and land creation. After construction, ACETube[®] can be covered with rip-rap, sand or other natural protector to preserve an intact nature land for the coexistence landform.

• Structure Protection

ACETube[®] can be the best anti-erosion solution for in-danger beachside houses restoration, bridge pier protection and pipeline protection. ACETube[®] is capable of acting as an immediate, important and helpful role in temporary structures or emergency reconstruction.

Environment Application

• Industrial Waste

Considerable amounts of sludge generated from mining, boiler ash, paper mill and chemical factory are waiting for being processed in industry. While the capacity of sludge lagoon is decreased with the increase of sediments, lots of money is necessary to spend for lagoon emptying and sediments removal.

ACETube® can be used in the waste dewatering application with the benefit of reducing 80 percent spaces for sediments volume and lowering the transportation and disposal costs.

• Agricultural Waste

Agricultural waste comes from livestock, aquaculture and flushing barns basically. Discharging the waste directly will pollute environment seriously.

ACETube® provides the treatment for agricultural waste without hardware sewage treatment facilities and costly mechanical dewatering procedure. Through the containing and draining solution, the collected dry solids can be recycled as fertilizer.

• River-Marine Sediments

Sediments in reservoir, lagoon, river and outfall often affect their functionality and serviceability of the system. Possible situations are such as service life decrease in reservoir or serious channel deposit. In order to sustain their functions and services, sediments should be cleaned out.

ACETube® with filled discarded sediment functions as a protection structure. Additionally, ACETube® even can be dropped at chosen place underwater by split barge and be able to dredge sediments in environment-friendly method. ACETube® also acts as an excellent helper in civil engineering.





Case Study

ACETube® Application on Beach Nourishment in UAE

Application : Beach Nourishment

Location : Le Meridien Aqah Beach, Fujarah, UAE

The application of ACETube® at Le Meridien Aqah Beach in Fujarah of UAE is to create an artificial structure in order to achieve the wave absorption and beach nourishment. Due to the lack of base protection and many years of waves and hurricanes attacks, the original rubble mound breakwater in Le Maridien Aqah Beach has totally lost its function. In 2007, Gonu Hurricane brought severe erosion which made shoreline seriously retreated; therefore it affected local tourism industry tremendously. The need of local building structure re-design became an urgent task. This considered not only achieving the restoration of the beach, but also the purpose to protect the beach from harm in the future natural disasters.

Details of the design consisted of building two jetties on the north and south sides of the coast vertical to the coastline and submerged breakwater parallel to the coastline to form a 227.5m x 225m area of protection. In addition, taking into account the different design positions, the installation applied four types of ACETube® with varied circumferences from 8.6m to 17.2m and length from 52m to 77m. Mainly, the filling material was collected directly from local sea sand. The shoaling effect successfully reduced the wave impact when passing through the protected area as well as decreased the probability of natural disasters caused by the erosion from hurricanes. Moreover, after construction, the skin of ACETube® has been covered with seaweed naturally, which creates a good and positive effect for the marine ecosystem.



Recovering Oil-Pipe Foundation using ACETube® as part of an Integral Beach Erosion Control Project

Application : Shoreline and Structure Protection

Location : Dos Bocas, Tabasco, Mexico

ACETube® technology was adopted as part of an integral solution for beach erosion problem at Dos Bocas PEMEX marine facilities. In order to protect the oil pipelines, various dimensions of sand filled ACETube® were designed to function as the foundation for oil pipelines to reduce the risks of destruction while the erosion occurred in the surf zone.

Along 1.9km long coastline, ACETube® also played as a role of submerged breakwater and the design was composed of 7.8m circumference ACETube® seamed with 2.5m long scour apron and smaller anchor tube (1.4m circumference).

Totally 62000sqm beach nourishment additionally enhanced the stability of the shoreline and oil pipelines. Submerged breakwater also decreased wave energy and losses. After construction, ACETube® well performed in erosion control.





ACETube[®] Solution Applied to Land Reclamation Engineering

Application : Land Reclamation

Location : Taichung, Taiwan

Taichung Harbor is located in the south side of an outfall. For many years, it has suffered the impact of drift sand siltation. In the north side of Taichung Harbor, there is a silt deposition area which functions to block and deposit the drift sand. Nevertheless, with the increase of sand drift load in the river, the silt deposition area is getting very close to saturation. Therefore, the function is relatively decreased, resulting in sediment not only depositing in the navigational channels out of harbor, but also crossing the breakwater and accumulating in the harbor, consequently, affecting the navigation of vessels and port operations. Taking into account the issue, the solution is considered to improve the ability of the silt deposition area which then it can slow down the sediment speed of harbor and navigational channel. Considering the budget of the project, the design adopts a cofferdam by ACETube[®] and dredges the silt deposit into area of cofferdam as land reclamation materials.

The 2.0m high and 2600m long cofferdam is constructed by using ACETube[®] with circumference from 14m to 16m, length from 40m to 61m, the filling material is extracted from the sand deposit area. The sand dredging scale of this project is about 1'000'000 m³. Thanks to this solution, it effectively recovers the sand deposition area with its function and also creates the available land of nearly half a million square meters for future planning which can provide new habitat investment for public and private enterprises developments.



ACETube® Solution to Barrier Island's Inlet Restoration Engineering in Taiwan

Application : Sandbar Restoration

Location : Tainan, Taiwan

ACETube® is applied as sandbar restoration in Tainan. The target is to protect the natural lagoon and seawall which are in back of the sandbar so that when typhoon or strong wave attacks during high tide, the sandbar is able to reduce the damage to the lagoon and seawall. In the early stage, this section suffered from coastal erosion. After many years of development in the construction of seawall and riprap, in addition, the sandbars and windbreak offered extra protection, over the past few years there had been no longer major disaster happening to the coastline and the area obtained temporary stability. When time goes by, the protective structures were pushed back, the coastal sandbar were eroded and dwarfed, and gradually started to lose their preventive functions. Therefore, the ecology and fishery resources of the lagoon were threatened once floods happened in coastline during heavy rainstorm seasons. The remediation for this issue adopted the ACETube® sandbar core method to replace the traditional sand pumping embankment method for the sandbar restoration. The size of ACETube® for this project is circumference of 8.6m and length of 50m. ACETube® is piled to reach the desired height of about three meters to fulfill the restoration of sandbar, and to place three lines of bamboo fence to procure return of natural sand. It increases the ability of sand restoration and on the other hand it also can achieve the protection of ACETube® from being harmed by direct impact of threatening substances.

After the various attacks of typhoon during 2012, ACETube® is hardly visible due to the sand cover, and none of the parts is damaged, the integrity is remained as it was built originally. More than 90 percent of the ACETube® is hidden in the sand layers, and the sandbar height stays the same as the design height. Thanks to ACETube® sandbar core construction, we can say that sandbar recovers its function and protects the natural lagoon from wave and typhoon attacks. The local risk is successfully decreased and the loss of lagoon as well as fish farms is simultaneously prevented.





Case Study

A Case of ACETube® Applied to Flood Plain Protection at Zhuoshui River in Taiwan

Application : Riverbank Protection

Location : Changhua, Taiwan

ACETube® can be applied as a revetment protection to eroded river. ACETube® is built as a barrier to prevent riverbank subjected to continuous erosion by the river current. Weather changes from year to year. In Taiwan, due to the inhomogeneous time and space distribution of rainfall, the rainfall intensity is always concentrated in a moment and leads to Zhuoshui River flowing rapidly with strong eroding power. In addition, the gravel industry which locates at upstream affects the sand loss, thus it causes Zhuoshui River downstream to be seriously eroded. Moreover, the flood plain foundation is constantly being washed out endangering the agricultural area and rear bank. Therefore, the need of solving this problem became an immediate task for the local community.

Traditional revetment can easily be destructed during rainy season when the flow velocity is high. Therefore, the engineer designed ACETube® with the circumference of 12.9m, length of 60m, and then ACETube® is piled in three layers to resist the water invasion. Not only ACETube® is applied in this solution, but also a layer of ACEFormer™ is placed as a protector to prevent driftwood and sharp stones brought by river current damaging ACETube®.

After the floods caused by the various typhoons in 2012, the revetment conserved its integrity. Relative to other traditional revetment, this way can better withstand flood attacks.



Dewatering Application to Industrial Wastewater Treatment

Application : Industrial Wastewater Treatment

Location : Water Treatment Plant, Taiwan

ACETube® containment dewatering system provides a cost effective method for the industrial sludge treatment. ACETube®, made of high strength polypropylene fabrics, is engineered to drain effluent water out of the fabrics through the pores while solids are retained. During the sludge treatment process, flocculating or coagulating operations are required.

ACETube® with size of 4.3m circumference and 12m length was designated. Results showed that ACETube® dewatering system performed very well in filtration as the volume of sediments was almost 99 percent contained in ACETube®. Furthermore, after dewatering, the water content of the containment solid was down to 85 percent immediately.





Application to Municipal Sludge

Application : Municipal Sludge Dewatering

Location : Moldova

ACETube[®] was used for municipal sludge dewatering and relevant pollution problems. A simple and cost-effective solution is to pump the polymer-conditioned sludge into specially-fabricated geotextile tube and then exerts the function of dewatering works under gravity over time. Solid waste will be contained inside ACETube[®] once the dewatering process is completed and the solid waste material will be moved to a controlled facility for disposal.



Dewatering Application to Reservoir Sediment Dredging

Application : Reservoir Sediment Dredging

Location : Li-Yu-Tan Reservoir, Miaoli, Taiwan

Due to the poor soil and water conservation of river upstream, slopes are subjected to erosion during rainfall. Thus, large amounts of sediment are led to run into the reservoir, coupled with the sludge from Ta-an river interbasin transfer. The serious diversion of sludge makes sedimentation situation become graver in Li-Yu-Tan Reservoir.

By providing ACETube® woven geotextile tube or a small bag body that highly processed, high-permeable tubular bag body enables filtration treatment, and its main components woven polypropylene fibers, can be easily shipped due to it is light-weight and foldable. ACETube® can be unfolded at the jobsite directly and then filled the dredged silt after connecting the pipeline. ACETube® is permeable but retains most of soil, the bag with retained soil can be transformed into a stable soil complex structure in the reservoir sediment remediation projects and plays great environmental benefits.





Nature's keeper - Cover the Earth with better garment

While the weather goes extremes causing massive disasters greater than ever; overwhelming flood, collapsing roadways, damaging landscape and exposing gravel are putting every living creature in jeopardy. ACE is committed to concrete-free eco-engineering by means of delivering integrated geosolutions of high performance woven products and experienced technical support to co-exist on Mother Nature.



We don't make the Earth, we make the Earth better !



ACE Geosynthetics

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