



Supumps Wechat
public account

Efficient dewatering technology of the river and lake sediment & the slurry generated by the project

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Build balanced water ecological environment

Become a first-class systematical solution provider in water environment industry



Sponge City



Beautiful countryside



Treatment of black and odorous water



Great Protection of the Yangtze River

Ultimate · innovation · pardon · Thanksgiving · Integrity



Supumps is a professional intelligent drainage system solutions provider, as the early promotion, professional production, large-scale integrated prefabricated pump station manufacturers, first in the industry will be the Internet of things, artificial intelligence, big data and other high-tech and drainage engineering equipment innovation integration, developed highly intelligent integrated prefabricated pump stations, integrated pump gates, integrated intelligent intercepting and lifting wells, river and lake sludge, engineering slurry high-dryness dehydration technology, rainwater storage treatment treatment scheme and other industry high-quality products and services, for our country “Sponge city”, “Beautiful countryside”, “Black smelly water treatment” and “Yangtze River Protection” construction output of high-quality products and services. In 2018, Shupenshi officially landed on the new third board, Stock Code: 873161.

At present, it has obtained more than 80 national patents and 7 software copyrights. In 2016, Supumps was successfully selected by the Ministry of housing and construction “Sponge City construction advanced applicable technology and product catalogue” and through the “Construction Industry Science and Technology Achievements Assessment”, is the only company in the industry to receive the two awards.

In 2018, we participated in the Evaluation Standard of Integrated Prefabricated Pump Station Green Building Materials, which was edited by the Science and Technology and Industrial Development Center of the Ministry of Housing.

2018 《HMPP Integrated Pump Station Industry Standard》 edited by China Architectural Standard Design and Research Institute

In 2019, he co-edited the International Standard Reference Atlas of Integrated Pump Station and the application technical specification of integrated intelligent intercepting and lifting well with China architectural standard design and Research Institute

2020 edited by Shanghai Municipal General Institute of Urban Construction Design and research and Shanghai Municipal Drainage Administration Bureau

2020 editorial Beijing University of Civil Engineering and Architecture “Technical specification for river closure facilities of combined drainage systems”, edited by Beijing Urban Drainage Group

《Technical Specification for Urban Rainwater regulation and storage》 edited by Tsinghua University in 2021 《Standard Atlas of Chongqing Municipal Drainage Structure》 edited by Chongqing Municipal Council edited by Tongji University 《Technical Specification for Integrated Operation Monitoring and intelligent management of urban drainage system plant, station and network》

2022 and China Building Metal Structure Association co-edited the national standard “Drainage pumping station integrated equipment”

2023 “Integrated rainwater axial flow pumping”, edited by China Academy of Architecture and Central South China Academy of Sciences

2024 editor-in-chief of the national standard “Integrated drainage and lifting well equipment for urban stormwater and sewage”, edited by the Chinese Academy of Building Standards Design and research



Policy Context

In order to implement the 《Mobilization order on the full construction of Happy Rivers and lakes》(2021 No. 1 River governor order) and the 《Guiding opinions on promoting the construction of Happy Rivers and lakes in the province》(2021 No.1 Su River Governor) We will fully implement the decisions and plans of the Central, provincial and municipal governments, and resolutely win the battle to defend clear water and protect rivers and lakes. Supumps insists on giving priority to ecology and green development, and attaches equal importance to improving pollution interception and treatment standards, as well as external control and internal treatment. Making every effort to promote the continuous improvement of water quality in rivers and lakes, we will accelerate the building of Happy Rivers and lakes that will benefit the people. Supumps, launched the “River and lake silt environmental protection dewatering project mud treatment treatment scheme”, mainly used to control water pollution, improve water ecological environment, ensure drinking water safety and other fields.

What are the problems in the rivers and lakes?

- Lake siltation and reduced storage capacity
- The reduction of lake and bay currents results in a single flow pattern
- Lake slope hardening and loss of biodiversity
- Severe eutrophication of lakes
- Improper breeding affects the ecology

Application Area



Treatment for the dredging of river, lake and reservoir

The geotube bags arranged along the embankment are used to strong the embankment and revetment. They are also used to make green landscaping.



Treatment for the slurry generated by the project

The slurry generated by the project is convenient for external transportation and utilization after dewatering by the geotube bag.



Treatment for the tunnel engineering slurry and stone

The slurry generated by the tunnel engineering is convenient for external transportation and utilization after dewatering by the geotube bag, when the target dryness is reached.



Treatment for the capacity reduction of Existing sludge

The low solid content sludge in the urban sewage treatment plant, can be reduced by half, after dewatering by the geotube bag. So that the vacant volume or landfill land can be reused.

Process Introduction

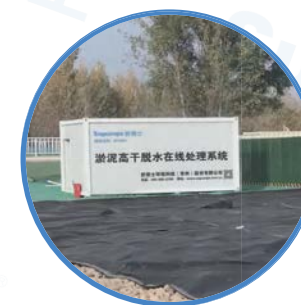
In view of the current water environment presented by eutrophication heavy pollution, heavy metals and other pollution status, by absorbing advanced low-carbon mud drying technology and concept innovation of German newtec company, the "Efficient dewatering online treatment technology" was developed.

The technology sets slurry pressure transportation, conditioning, separation, filtration and sludge dehydration solidification treatment as one, equipped with automatic intelligent management system, from the sludge landing to the final dry mud disposal without secondary pollution, to solve the silt problem in rivers and lakes.



Sludge/Dredging

Low flow rate 100-1000m³/h depth controllable cooperative GPS positioning system for underwater/sludge surface operation



Sludge/sludge on-line treatment

Treatment Capacity: 100-1000m³/H vacuole method to improve the flocculability of sludge particles, high-efficient and rapid flocculation of heavy metals and other harmful substances control (on-demand) on-line deodorization (on demand)



geotube bag high dry dehydration

The final solid content of 45-70% 99.9% solid interception, water clear can be stacked, occupied small dewatering process without mechanical maintenance, low energy consumption can achieve rapid dehydration



Utilization of dry mud

Low-lying land flat restoration lakeside zone restoration and wetland construction sediment return to forest road project backfill materials construction materials

Advantages

01

The quality of residual water reaches the standard, without secondary pollution

The sludge desiccation uses the medicament for the country to allow to use the medicament, the entire process adds the medicament accurately, will not have the influence to the residual water, the residual water quality achieves the standard. No change in soil properties after drying, can be re-cultivated, resource-based use, will not cause secondary pollution to the surrounding environment.

02

Solidified soil has high dryness

After reaching the drying period, the volume of the silt is reduced obviously, the dryness is higher, and the solid content can reach 45% or more. Transportation costs can be reduced if shipping is required, and there is no leakage in the transportation process.

03

Low overall cost

The overall cost per underwater is less than 30% or more of the plate and frame filter press.

04

High efficiency, short construction period

Under the condition of continuous feeding, the on-line treatment system can realize the large capacity redundancy of the mud water division pipe bag, and can simultaneously dehydrate the slurry after a large amount of conditioning at one time, and the mud-water separation effect is better, dewatering time is short . On-line processing equipment can be unlimited expansion, linkage production, to ensure that construction requirements. Under 700,000 square meters of water, the construction period can be shortened to 90 days.

05

Small footprint, no odor pollution

The filling height of single-layer geotextile bag can reach at least 2.5 m. it can be stacked in multiple layers according to the actual situation to reduce the land occupation. And the geotube bag dewatering process is completely enclosed, which can effectively control the smell.

Process Comparison

Comparison Table of Technical Indicators for Different Sludge Dehydration and Consolidation Processes

Dehydration method	Plate and frame press filter	Natural drying method	Natural drying method	Geotextile bag method	Chemical agitation curing method
Methodclass	Physics+Chemistry	Physics	Physics	Physics	Chemistry
Constmction equipment	High pressure diaphragm filter press	/	Drain board+ Vacuum pump	High strength geotextile	Special mixing machine
Plus the medicine machine	FSA+HEC Fly ash, quick lime etc. Large quantity of the product	/	/	The dosage of polymer is moderate	Cement, fly ash, catalyst, etc.Large quantity of the product
Moisture content after treatment/Status	Moisture content 30%~55% Soft plastic (The moisture content reduced by adding lime, Increase the amount of mud and tail water PH increases)	Moisture content 70% Flow-soft plastic	Moisture content 45%~55% Flow-soft plastic	Moisture content 45%~55% Flow-soft plastic	Moisture content 30%~40% Soft plastic (The moisture content reduced by adding lime, Increase the amount of mud and tail water PH increases)
Processing cycle	The amount of drying per hour of a single unit is very small	3~5 years	2~3 months	1-2 months Can Be a large number of one-time desiccant treatment	More than 1 month
The construction occupies an area	Bigger	Maximum	Bigger	Bigger	Bigger
DecrementThan underwater	Bigger	Minimum	Smaller	Bigger	Bigger
Harmless	Passivation and sealing	Not handled	Not handled	Passivation and sealing	Passivation and sealing
Resources	Can be used as engineering soil, such as fired cement brick	Use face damaged	Greening and restoration of cultivation	Greening and restoration of cultivation	Low standard engineering soil
Advantages	The sludge after pressure filtration was reduced, but the addition of lime also had obvious dry sludge increment	Direct filling without silt treatment	The construction is simple and economical	Relatively environmentally friendly, short curing cycle, l arge daily treatment capacity, no need to build a factory, tail water without special treatment, not inferior to raw water quality	Good curing effect and low efficiency
Disadvantages	The factory building construction quantity is big Intermittent productivity is low Filter cloth should be cleaned frequently The tail water needs to be treated and discharged There is an increase in the cost of additional water treatment	Long curing period Long-term occupation of land resources, and covers a large area Affected by the weather	Long curing period Long-term occupation of land resources, and covers a large area Affected by the weather	Short-term occupation of land The range is large	Add chemical curing agent, change the nature, not environmental protection The area of the maintenance site is large and needs a certain maintenance time. The tail water needs to be treated and discharged There is an increase in the cost of additional water treatment

Materials Selection

According to the requirements of the project, such as the actual topography, sludge characteristics, filling requirements, water indicators and so on, our laboratory through simulation analysis, our division through small scale, pilot-scale, select the matching conditioning agent and geotube bag.

Conditioner

The common models of conditioner are SA6490, SA6127, SA6147, SA6492, SA6494, SA6240, SA6650, SA6800, SY8939, SY8440, SY8756, SY8635, SY8656, SY8960



Geotube bag

Division I of the United Nations and other well-known brands custom-developed high performance geotube bags, commonly used examples: SPS300, SPS500, SPS750...



Equipments

The company has 10 sets of on-line processing equipment, can quickly organize production, to ensure the orderly development of construction, quality and stability. The daily capacity of single equipment can be up to 40000m3/d. according to the requirement of the project, the equipment can be expanded infinitely

Number	Model	Daily processing capacity	Application scenarios
1	SPS-QY-003010	6000m³/d	Meet town inland river desilting dry
2	SPS-QY-005010	10000m³/d	Meet town inland river desilting dry
3	SPS-QY-008010	16000m³/d	To meet the needs of largescale river and lake desilting and drying
4	SPS-QY-008020	16000m³/d	
5	SPS-QY-008030	16000m³/d	
6	SPS-QY-008040	16000m³/d	
7	SPS-QY-008050	16000m³/d	
8	SPS-QY-020010	40000m³/d	
9	SPS-QY-020020	40000m³/d	



Construction Team

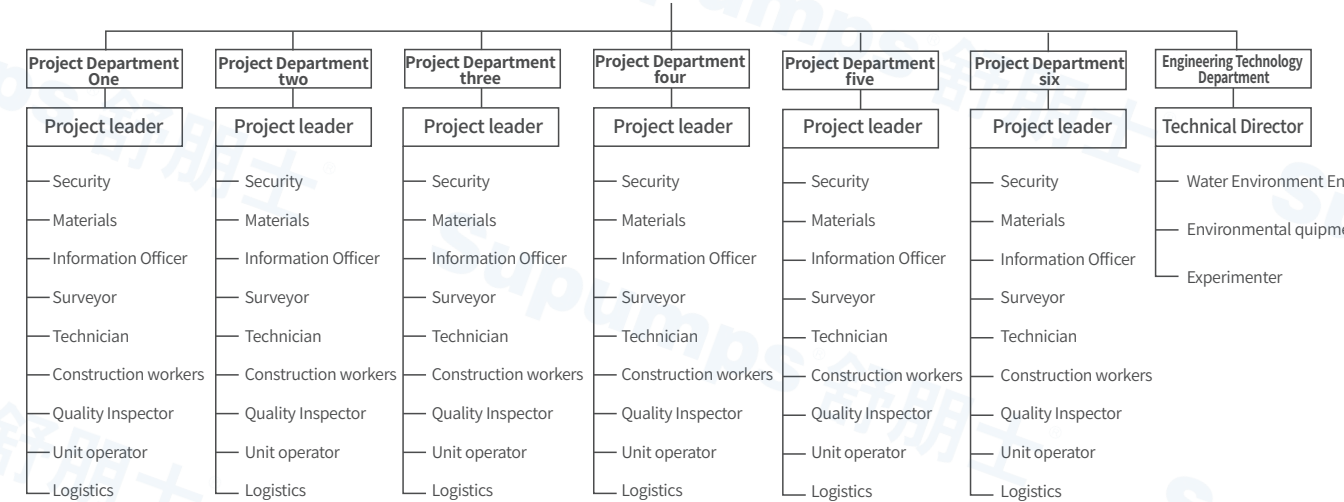
Our existing construction team of more than 50 people, 6 managers, 2 professors, 3 water environmental engineers, 2 environmental equipment engineers, 3 laboratory, 5 technicians, construction staff 4, other construction staff more than 30 people.

Can undertake 6 standard sections at the same time construction



Team Architecture

Engineering Director



Project Cases

01 Wujin District, GE Lake



Construction content:

Construction contents of sediment dredging, sediment consolidation, residual water treatment, after the completion of the construction of sediment solidification broken bag farm lawn and sowing grass seeds for protection, to avoid soil erosion.

Dredging area: 196.2 ten thousand m² **Scale of dredging:** 71.2 ten thousand m³

Drying the site: 10.85 ten thousand m² **Target dryness:** Moisture Content 55%

Construction period: 1 year

Engineering performance: By January, the 2024 had reached 4.3 millionStage I of the new round of ecological desilting works at Wujin District Tai Lake (tender I) square metres underwater

02 Stage I of the new round of ecological desilting works at Wujin District Tai Lake (tender I)



Project background:

To further improve Tai Lake Tai Lake's water environment, consolidate the effectiveness of the integrated management of the water environment in Hong Kong, including the ecological silt removal works, and further promote the treatment of contaminated sediment in Tai Lake.

Scale of dredging: 39.93 ten thousand m³

Target dryness: Moisture Content 55%

Construction period: Two Months

03 The first stage of ecological desilting project, an eco-industry promotion project in Shuimeigehu Lake, Yixing



Construction content:
Consolidation of sediment

Type of silt:
Lake sediment

Scale of dredging:
30 ten thousand m³(On land dry side)

Drying the site:
8.5 ten thousand m²

Target dryness:
Moisture Content 55%

Construction period:
3 months

04 GE Lake's drinking water source



Construction content:
Bottom sediment consolidation and residual water monitoring

Type of silt:
Lake sediment

Scale of dredging:
10 ten thousand m³

Drying the site:
2.5 ten thousand m²

Target dryness:
Moisture Content 55%

Construction period:
45 days

05 Changzhou Ben Giang Development Zone



Amount of silt:32000m³

Solid content before dewatering treatment:10%

Organic matter content:4.67%

Solid content after water treatment:40%

06 Gehu near-shore ecological restoration high-tech zone Jiazawa area environmental protection desilting higher than the degree of dewatering project



Amount of silt:30000m³

Processing capacity:420m³/h

Solid content after water treatment:45%

07 Sanhe Whole Tourism Environment Enhancement Project -Phase- hlse i) phase ii-landscRiveriCourseuse



Amount of silt: 20000m³
(On land dry side)

Processing capacity: 400m³/h

Solid content after water treatment: 55 %

08 Fuhe desilting project in xiongan new district, Hebei province



Amount of silt: 15000m³

Processing capacity: 450m³/h

Solid content after water treatment: 40 %

09 Belfry Happy Lake and other lake desilting project



Amount of silt: 15000m³

Processing capacity: 400m³/h

Solid content after water treatment: 45 %

10 Mazhuang Canal desilting project in xiongan new area, Hebei province



Amount of silt: 8000m³

Processing capacity: 250m³/h

Solid content after water treatment: 45 %

11 Stage 2 of the GE Lake Ge Lake drinking water source (Ge Lake ecological silt removal and restoration stage I)



Scale of dredging: 72.18 ten thousand m³

Drying the site: 12 ten thousand m²

Target dryness: Moisture Content 55%

Construction period: 180 days

12 GE Lake Ge Lake integrated remediation phase I control of algal blooms at the drinking water source of GE Lake (ecological silt removal and restoration phase I project)



Scale of dredging: 33.56 ten thousand m³

Drying the site: 10 ten thousand m²

Target dryness: Moisture Content 55%

Construction period: 60 days

13 Phase I of the integrated remediation project, stage IV of the prevention and control of water blooms at the drinking water source of GE Lake Ge Lake (stage I of the ecological dredging and restoration project)



Scale of dredging: 76.27 ten thousand m³

Drying the site: 10 ten thousand m²

Target dryness: Moisture Content 55%

Construction period: 120 days

14 GE Lake Ge Lake Integrated Remediation Phase I water source water bloom prevention and Control Project (GE Lake Ecological Desilting and Restoration Phase I project)



Scale of dredging: 43.41 ten thousand m³

Drying the site: 6 ten thousand m²

Target dryness: Moisture Content 55%

Construction period: 60 days

Results of dredging papers

Application of high-efficiency and high-dryness dewatering technology in a river bottom mud dredging project

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高效率高干度脱水处理工艺在河底淤泥清淤工程中的应用
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摘要: 介绍了一种高效率高干度脱水处理工艺在淤泥清淤工程中的应用情况。该工艺采用先进的脱水设备, 结合科学的脱水工艺, 实现了淤泥的高效脱水。该工艺具有脱水效率高、脱水干度高、脱水成本低等优点。该工艺在淤泥清淤工程中得到了广泛应用, 取得了良好的效果。

关键词: 淤泥; 脱水; 脱水设备; 脱水工艺; 脱水效率; 脱水干度; 脱水成本

Abstract: A high-efficiency and high-dryness dewatering technology is introduced in this paper. The technology uses advanced dewatering equipment and scientific dewatering process to achieve efficient dewatering of sludge. The technology has the advantages of high dewatering efficiency, high dewatering dryness, and low dewatering cost. The technology has been widely used in sludge dewatering projects and has achieved good results.

Keywords: sludge; dewatering; dewatering equipment; dewatering process; dewatering efficiency; dewatering dryness; dewatering cost

1 工程背景
随着城市人口的增长和工业的发展, 城市污水排放量不断增加。污水中含有大量的悬浮物、有机物和无机物, 这些物质在污水排放过程中会沉降到河底, 形成淤泥。淤泥的堆积不仅会影响河道的通航能力, 还会对河道的生态环境造成破坏。因此, 对河道淤泥进行清淤处理是非常必要的。

2 工艺原理
高效率高干度脱水处理工艺的原理是利用先进的脱水设备, 结合科学的脱水工艺, 实现淤泥的高效脱水。该工艺采用先进的脱水设备, 结合科学的脱水工艺, 实现了淤泥的高效脱水。该工艺具有脱水效率高、脱水干度高、脱水成本低等优点。

3 工程应用
该工艺在淤泥清淤工程中得到了广泛应用, 取得了良好的效果。该工艺具有脱水效率高、脱水干度高、脱水成本低等优点。该工艺在淤泥清淤工程中得到了广泛应用, 取得了良好的效果。