



S u s t a i n w a t e r

SLUDGE TREATMENT

www.tikal-co.com



Mission

Preserve water resources from waste, non-use and pollution by providing innovative and affordable water treatment and irrigation systems that are more up-to-date with technology.



Vision:

Empowering our region to become a global role model in water resource protection by strategically addressing physical, chemical, and biological gaps.



Company overview

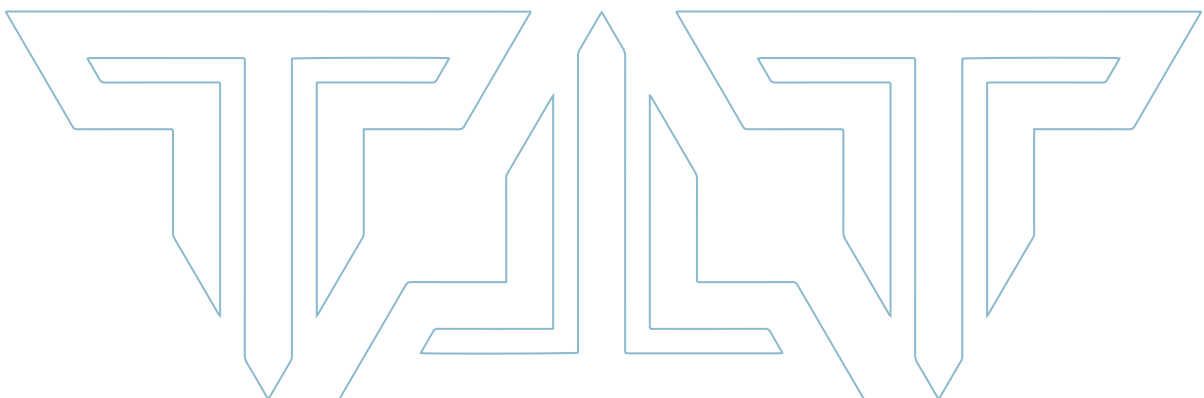
At Tikal Water & Irrigation Systems, we hold the belief that everyone deserves a sustainable environment free from pollution and resource wastage.

Tikal was Founded in 2019 by a group of engineers driven by initiative, innovation, and renewal, it was established to address the pressing challenges of untreated water, and unsustainable irrigation practices.

Our concern is to provide a range of integrated solutions and services that play a crucial role in physical, chemical, and biological challenges, and apply them through Vital national projects.

Tikal also attaches special importance to small communities by designing customized and intelligent solutions that allow using modern technologies and meet all needs and standards.

At Tikal, we aim to preserve and sustain water resources and are committed to delivering the latest solutions and services to our clients. To achieve this, we invest in research and development to enhance access to modern technologies and making a positive impact on the world.





Tikal Water Solutions

A. Utilities

«Through its water solutions, Tikal Company aims to simplify the process of preserving and benefiting from water resources by providing comprehensive and integrated solutions for most vital processes in water treatment, Through (Headworks) Tikal aims to provide Primary treatment one of the urgent roles in wastewater treatment, (Clarification) Our solution to remove of SS, Colloidal Particles, and impurities from raw water, Followed by)Filtration) to achieve the desired level of purity, and for Treatment and dispose of Sludge (Sludge treatment).

Tikal else provides physical solutions through (Pump Station) To prevent some harmful phenomena." these solutions have more than 71% coverage of basic water treatment processes and we aim to be up-to-date continuously.»



B. Small Communities:

TikalOne™, a pioneer division within our corporate framework, is strategically poised to revolutionize water treatment for small communities, ranging from 500 to 50,000 residents.

Born out of a commitment to excellence and guided by the principles of precision and innovation, TikalOne™ offers a visionary approach to integrated water solutions.

At its core, TikalOne™ is not just a brand; it's a scientific breakthrough in water treatment. Embracing the concept of modular intelligence, our bespoke systems, include Sea Water Reverse Osmosis (SWRO), Brackish Water Reverse Osmosis (BWRO), Munacibile water treatment (MW), MBBR (Moving Bed Biofilm Reactor), and SBR (Sequential Batch Reactor).

These units are designed to the distinctive characteristics of each water source. with cutting-edge, adaptable approach allows TikalOne™ to transcend traditional water treatment models. With a palette of technological sophistication and an unwavering commitment to sustainability,

TikalOne™ aspires to be the hallmark of professional water management, setting new standards for efficiency, reliability, and environmental consciousness.



TikalOne™

Sludge in Water Treatment: A Comprehensive Overview

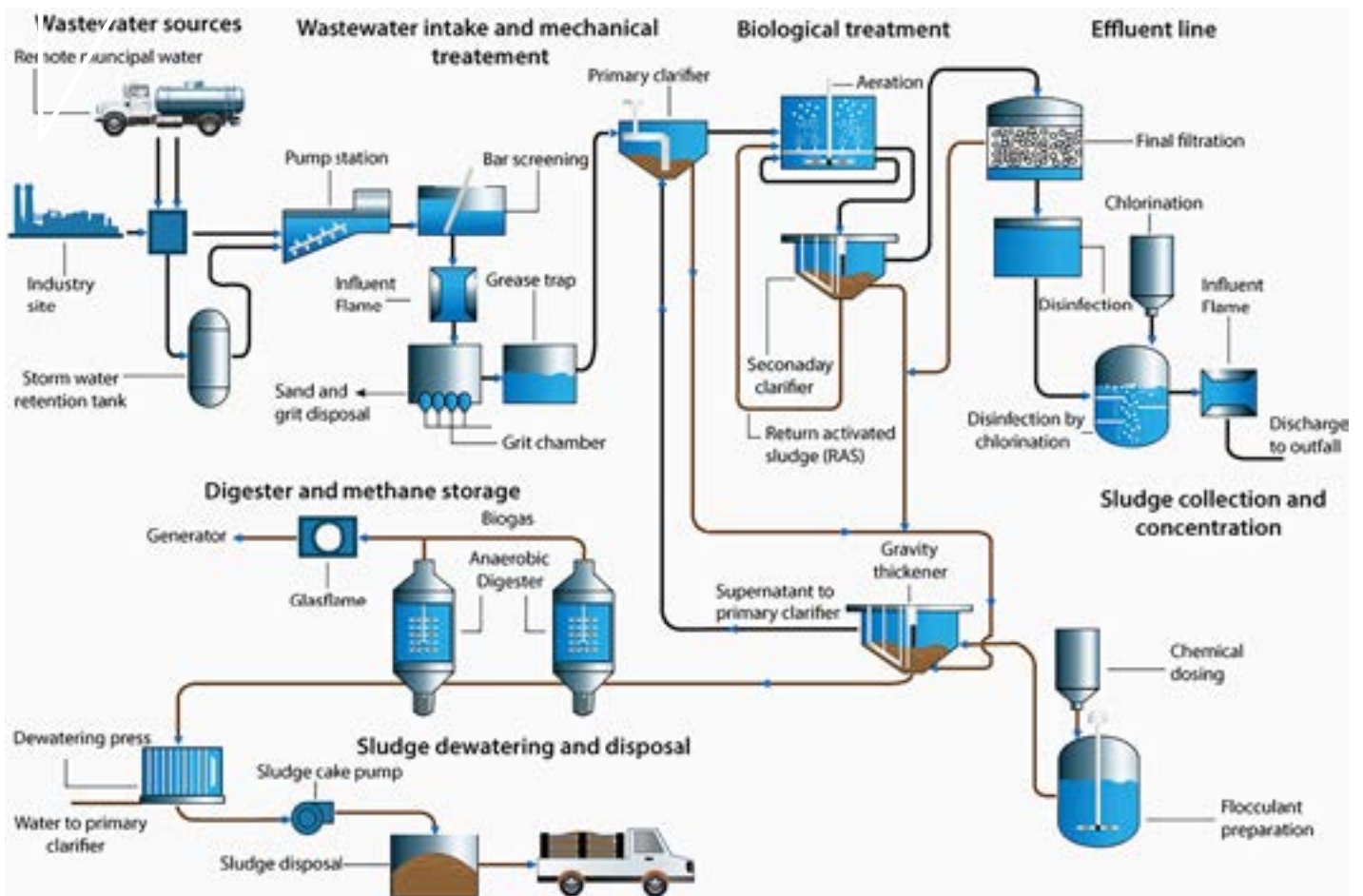
Table of Content

Company overview	2
Tikal Water Solutions	3
Sludge in Water Treatment	6
Tikal Sludge solution:	
1. Thickening	9
2. Dewatering	13
a. Belt Press	
b. Centrifugal	
c. Screw Press	
d. Filter Press	
3. Sludge Dry Bed	18



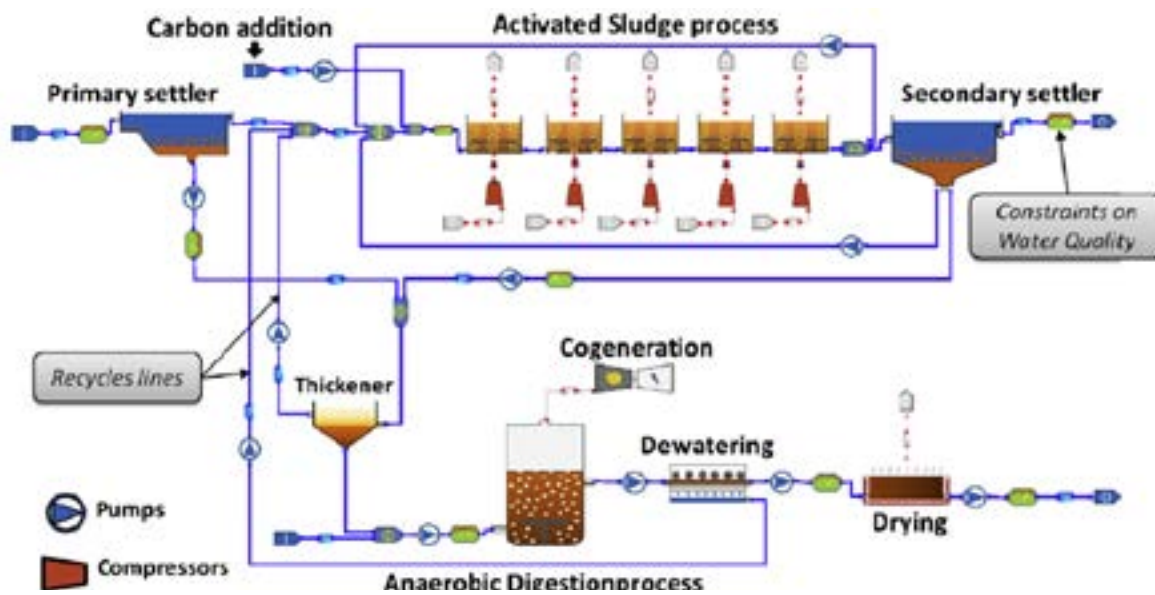
Sludge in Water Treatment:

In the realm of water treatment, sludge is the residual semi-solid material left behind after the application of various water treatment processes. It encompasses solid particles, organic and inorganic materials, microorganisms, and other substances that have been separated from water during treatments like sedimentation, coagulation, flocculation, and filtration.



Tikal stands at the forefront of sludge management, offering a holistic suite of services and cutting-edge products to ensure the responsible and efficient treatment of sludge generated in water treatment processes. Our commitment extends from identifying innovative technologies to maintaining operational excellence throughout the sludge treatment lifecycle.

• Sludge Treatment Process:



1. Thickening:

- Objective: Increase solids concentration in the sludge.
- Methods: Gravity settling, centrifugation, or other efficient techniques.

2. Stabilization:

- Objective: Reduce biodegradability and control odors.
- Methods: Aerobic digestion, anaerobic digestion, and lime stabilization.

3. Dewatering:

- Objective: Further reduce water content for easier handling and disposal.
- Methods: Centrifugation, belt filter presses, and drying beds.

4. Disposal or Reuse:

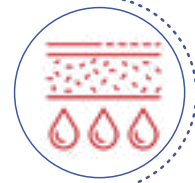
- Objective: Efficiently manage the treated sludge.
- Methods:
 - Landfilling: Safe disposal in designated areas.
 - Incineration: Thermal treatment for volume reduction.
 - Land Application: Beneficial reuse in agriculture.
 - Biogas Generation: Utilize generated biogas as an energy source.

Tikals Service Offerings in Sludge Management:

Service | Product Offering

1. Technology Identification

- Identify and implement cutting-edge technologies for sludge management.



2. Process Design

- Tailor efficient processes to meet specific sludge treatment requirements.

3. Engineering

- Apply engineering expertise to optimize sludge treatment systems.



4. Project Execution

- Skillfully execute projects from conception to implementation.

4. Installation:

- Ensure precise installation of sludge treatment components.



6. Start-Up

- Facilitate seamless system initiation for optimal performance.

7. Commissioning & Performance Testing

- Rigorous testing to ensure sludge treatment systems meet performance standards.

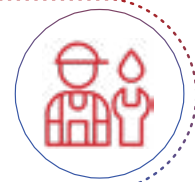


8. Rehabilitation

- Upgrade and rejuvenate existing sludge treatment infrastructure.

9. Maintenance & Installation

- Provide ongoing support for sustained efficiency in sludge treatment operations.





Tikal Products

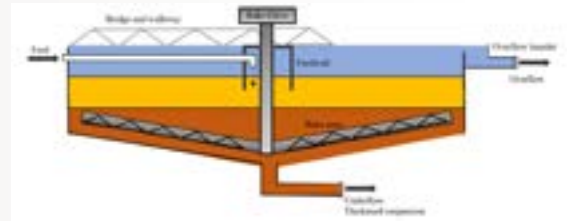
1. Thickening:

Sludge Thickener: Tikal Sludge Thickener: Optimal Volume Reduction and Enhanced Efficiency

• Sludge Thickener Design Characteristics:

1. Mechanism:

- Sludge thickeners employ effective mechanisms (scraping, raking, or suction devices) to facilitate the settling of solids, promoting their movement towards the collection point.



2. Tank Design:

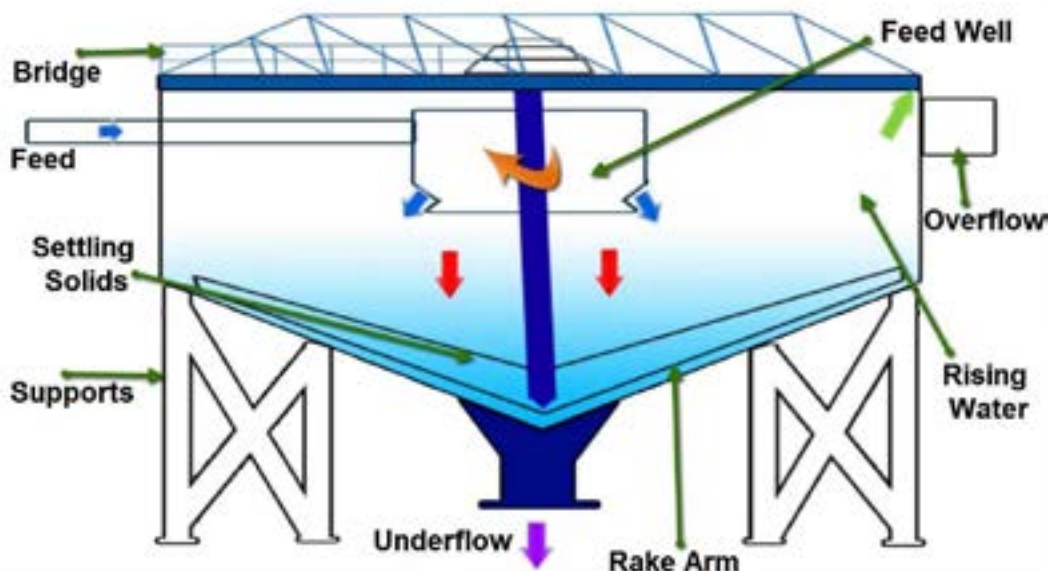
- Designed as spacious, shallow tanks or basins with sloped or conical bottoms, ensuring efficient collection of thickened sludge.

3. Overflow Weir:

- Features an overflow weir at the top to remove clarified water post-thickening, directing it back into the treatment process or for discharge.

4. Underflow Discharge:

- Thickened sludge is discharged from the tanks bottom through an underflow discharge mechanism, either pumped or gravity-fed to subsequent treatment processes.



Sludge Thickener advantages

1. Volume Reduction:

- Significantly reduces sludge volume, facilitating more cost-effective handling, transportation, and disposal.

2. Improved Settling:

- Enhances the settling of solids, ensuring effective separation of solids and water, thereby boosting the overall efficiency of wastewater treatment.

3. Operational Flexibility:

- Adaptable design accommodates variations in sludge characteristics and flow rates, offering operational flexibility in changing wastewater conditions.

4. Cost Savings:

- Contributes to substantial cost savings by reducing sludge volume, benefiting transportation, disposal, and downstream processes like dewatering and digestion.



Applications:

1. Municipal Wastewater Treatment Plants:

- Widely used in municipal wastewater treatment plants to manage large volumes of sludge generated during the treatment process.

2. Industrial Wastewater Treatment:

- Ideal for industries with significant wastewater containing suspended solids, enhancing treatment efficiency, and minimizing environmental impact.

3. Preparation for Digestion:

- Serves as a preliminary step before anaerobic digestion, facilitating the stabilization of organic matter in sludge and biogas production.

4. Dewatering Processes:

- Prepares thickened sludge for subsequent dewatering processes, such as belt filter presses or centrifuges, to further reduce water content before disposal.



Products

Sludge Thickener:

At Tikal, our Sludge Thickener stands as a testament to efficiency, operational flexibility, and cost-effectiveness. Tailored for municipal and industrial applications, it plays a pivotal role in optimizing the sludge treatment journey, ensuring a streamlined and environmentally conscious process.

A large industrial machine, likely a dewatering press, is shown in a factory setting. The machine is complex, with various pipes, a large blue motor, and a control panel. It is mounted on a metal frame with a walkway and safety railings. The background shows a concrete ceiling and other industrial equipment.

Tikal Products

2. Dewatering:

Dewatering Excellence with Tikal Solutions

• Types of Dewatering Systems:

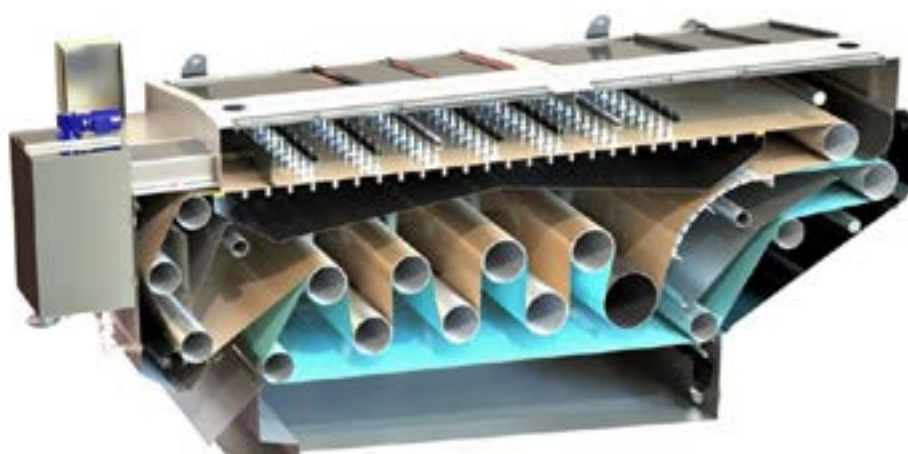
1. Belt Filter Press:

-Definition: A belt filter press uses a series of belts to squeeze water out of sludge, forming a thickened sludge cake.

-Design Characteristics: Sludge is fed between two belts, and as it passes through rollers, pressure is applied, squeezing out water. The resulting cake is then removed.

-Advantages: Continuous operation, high efficiency, and suitable for various sludge types.

-Applications: Municipal and industrial wastewater treatment plants.



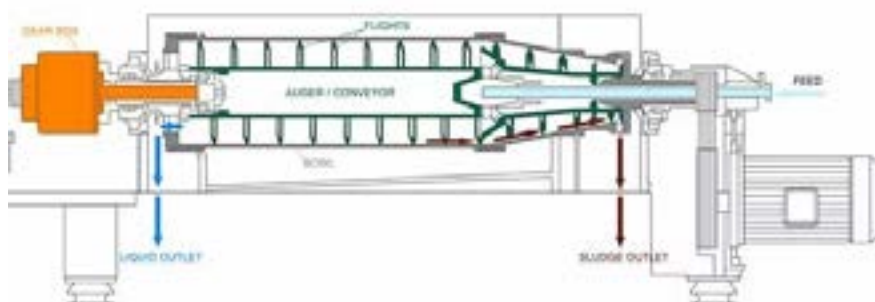
2. Centrifugation:

-Definition: Centrifugation uses centrifugal force to separate water from sludge by rapidly rotating a drum or bowl.

-Design Characteristics: Sludge is introduced into a rotating drum, and centrifugal force pushes water to the drum's periphery, allowing the solids to be collected.

-Advantages: Fast operation, high solids capture efficiency, and versatility in handling different sludge types.

-Applications: Municipal and industrial wastewater treatment, as well as in other industries like food processing.



3. Filter Press:

-Definition: A filter press uses a series of plates and frames to mechanically compress sludge and remove water.

-Design Characteristics: Sludge is pumped into chambers formed by plates and frames, and pressure is applied to dewater the sludge.

-Advantages: Efficient for high solids recovery, suitable for various sludge types, and can produce a dry cake.

-Applications: Municipal and industrial wastewater treatment, mining, and other industrial processes.



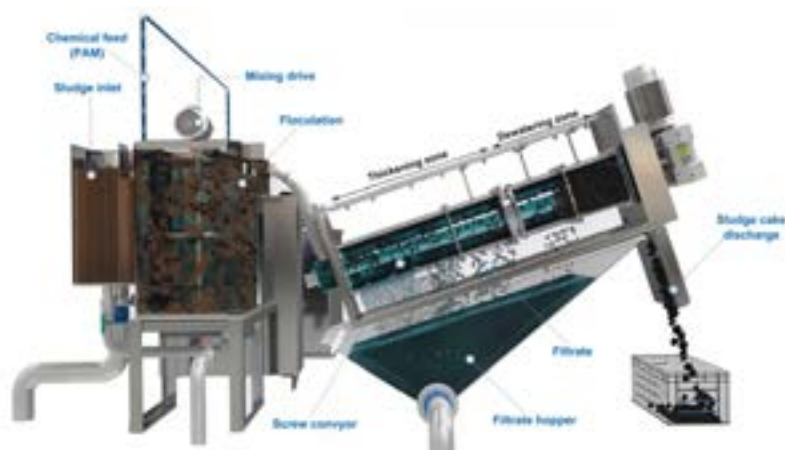
4. Screw Press:

-Definition: A screw press uses a rotating screw to gradually compress and dewater sludge.

-Design Characteristics: Sludge is fed into the press, and the screw applies pressure, squeezing out water as the sludge moves through the press.

-Advantages: Continuous operation, compact design, and efficient dewatering.

-Applications: Municipal wastewater treatment, food processing, and pulp and paper industry.



Dewatering Advantages:

1. Volume Reduction:

- Dewatering significantly reduces the volume of sludge, making it more economical to transport and dispose of.

2. Increased Solids Concentration:

- By removing water, dewatering systems increase the concentration of solids in sludge, improving its handling characteristics.

3. Cost Savings:

- Reduced volume and increased solids concentration lead to cost savings in transportation, disposal, and downstream processing.

4. Environmental Compliance:

- Dewatering aids in meeting environmental regulations by facilitating proper sludge disposal and minimizing environmental impact.



Applications:

1. Municipal Wastewater Treatment Plants:

- Dewatering systems are extensively used in municipal wastewater treatment to manage and process the large volumes of sludge produced.

2. Industrial Wastewater Treatment:

- Various industries, such as chemical, food, and mining, utilize dewatering systems to handle and dispose of sludge generated during their processes.

3. Biosolids Management:

- Dewatering is a key step in the management of biosolids, the treated and stabilized organic byproduct of wastewater treatment, which can be reused in agriculture.

4. Landfill Disposal:

- Dewatered sludge is often suitable for disposal in landfills, meeting regulatory requirements and minimizing environmental impact.





Tikal Products

4. Dry Beds: Sunlit Solutions: Drying Beds by Tikal

Sludge Drying Beds: A Natural Approach

Sludge drying beds, are an effective and environmentally friendly method for dewatering and drying sludge in wastewater treatment. These beds use natural processes, such as gravity drainage, evaporation, and exposure to sunlight and air, to remove water from sludge, resulting in a solid material suitable for disposal.

• Types of Scraper Bridges:

1. Bed Construction:

- Constructed as shallow basins with impermeable bottoms to prevent water percolation. Sidewalls may be present to contain the sludge.



2. Sludge Application:

- Sludge evenly spread onto the bed surface, forming a uniform layer. Thickness varies based on design and sludge characteristics.

3. Drainage System:

- Equipped with a drainage system, including underdrains or perforated pipes, to collect water draining from the sludge during drying.



4. Sunlight and Air Exposure:

- Relies on natural sunlight and air exposure for the drying process. Open to the atmosphere for evaporation and solar drying.

Dry Beds Advantages:

1. Cost-Effectiveness:

- Efficient and cost-effective, requiring minimal infrastructure and operational costs.

2. Environmentally Friendly:

- Utilizes natural processes, minimizing the environmental impact and energy consumption.

3. Simple Operation:

- Easy to operate and maintain, making it a user-friendly solution for sludge drying.

4. Land Application:

- Dewatered sludge can be applied to agricultural land as a nutrient-rich soil amendment, promoting sustainable agricultural practices.

Product

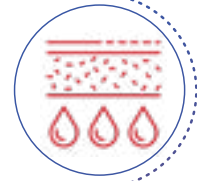
- Sand, Gravel.

Dry Beds System

Service | Product Offering

1. Technology Identification

- Identify and implement cutting-edge technologies for sludge management.



2. Process Design

- Tailor efficient processes to meet specific sludge treatment requirements.



3. Engineering

- Apply engineering expertise to optimize sludge treatment systems.



4. Project Execution

- Skillfully execute projects from conception to implementation.



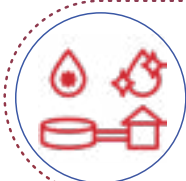
4. Installation:

- Ensure precise installation of sludge treatment components.



6. Start-Up

- Facilitate seamless system initiation for optimal performance.



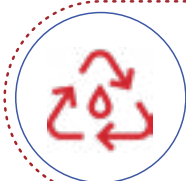
7. Commissioning & Performance Testing

- Rigorous testing to ensure sludge treatment systems meet performance standards.



8. Rehabilitation

- Upgrade and rejuvenate existing sludge treatment infrastructure.



9. Maintenance & Installation

- Provide ongoing support for sustained efficiency in sludge treatment operations.



Why Choose Tikal?



• Innovation:

Embracing cutting-edge technology in design and execution.



• Safety:

Implementing features to prevent equipment failure and operational risks.



• Reliability:

Ensuring robustness through redundant systems.



• Efficiency:

Optimizing energy usage and overall operational costs.

Tikal other Solutions?



Your Challenges Are Our Concerns.

 01019689990

 info@tikal.co.com

 contact@tikal.co.com

 www.tikal-co.com

 Gamal AIDin Dwidar Street 1, ALHadiqah Ad Dawleyah, Nasr City, Cairo