BioComb®

生物净化槽

Biological purification tank

BHT Environ®
Biologische Abwasserreinigungs-Technologie

Beijing BHT Environmental Technology Co., Ltd

Introduction to Biological purification tank

BioComb is a small and micro sewage treatment device independently developed by BHT's R&D team. It is specifically designed for sewage treatment systems in suburban and rural areas where water volume is small or pipeline networks are unavailable for coverage.

The effluent quality of BioComb meets the standards for **marine discharge** or **reclaimed water in the Middle East region.**

Applicable Scenarios:

- Rural and suburban areas: Single-family/multi-family combined use, natural villages, farm stays, and folk villages;
- Tourism and high-end real estate: Villa areas, resorts, homestays in scenic spots (requiring concealment and landscape friendliness);
- Public service nodes: Areas without access to pipe networks such as schools, gas stations, service areas, and temporary construction site barracks;
- Others: All other decentralized or distributed small sewage treatment stations with a capacity of less than 50 cubic meters.

Introduction to Technology

BioComb®

Technology： IFAS (Immersed Fixed-Film Activated Sludge). Considering the characteristics of inlet water in the Middle East, such as high COD and high ammonia nitrogen, BioComb adopts the IFAS process combining suspended bed biofilm and activated sludge. This process improves sewage treatment efficiency and effectively ensures the effluent performance of BioComb.

Enclosure: SMC molding; the main equipment adopts a FRP (Fiberglass Reinforced Plastic) molded tank.

Aeration System： Aerator with High Oxygen Utilization Efficiency.

Bio-media: High Specific Surface Area Modified MBBR Media.

Blower： Energy-Saving Diaphragm Air Pump.

Indicator	BioComb（Influent）	BioComb（Effluent）
COD	< 600 mg/L	<50mg/L
BOD	< 300 mg/L	< 10 mg/L
NH_4^+ -N	< 44mg/L	< 5mg/L
TN	< 60mg/L	<15mg/L
TSS	< 300 mg/L	< 20 mg/L
TP	< 4mg/L	< 3mg/L

BH Enviro® Biologische Hochleistungs-Technologie

Advantages of the Equipment

BioComb®

Standardized Manufacturing

Outstanding Quality

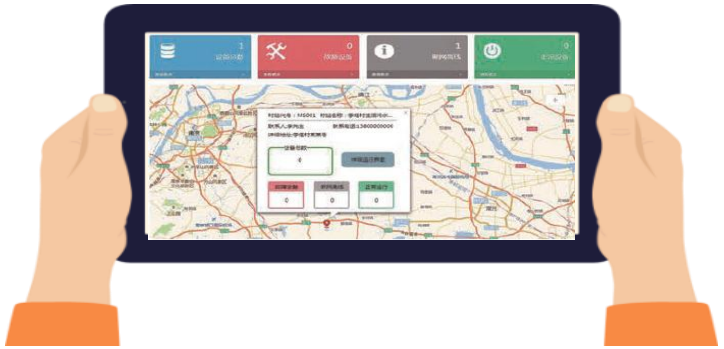
Long Service Life

Modular Assembly

Convenient and **Fast Transportation**

Advanced Technology， **Ultra-Low** Energy Consumption

Flexible Combination， **Stable** and Reliable



Intelligent Control

Remote Operation and Maintenance

ENVITEC Biologische Hochleistungs-Technologie

Technical Details ——Sewage Treatment Process

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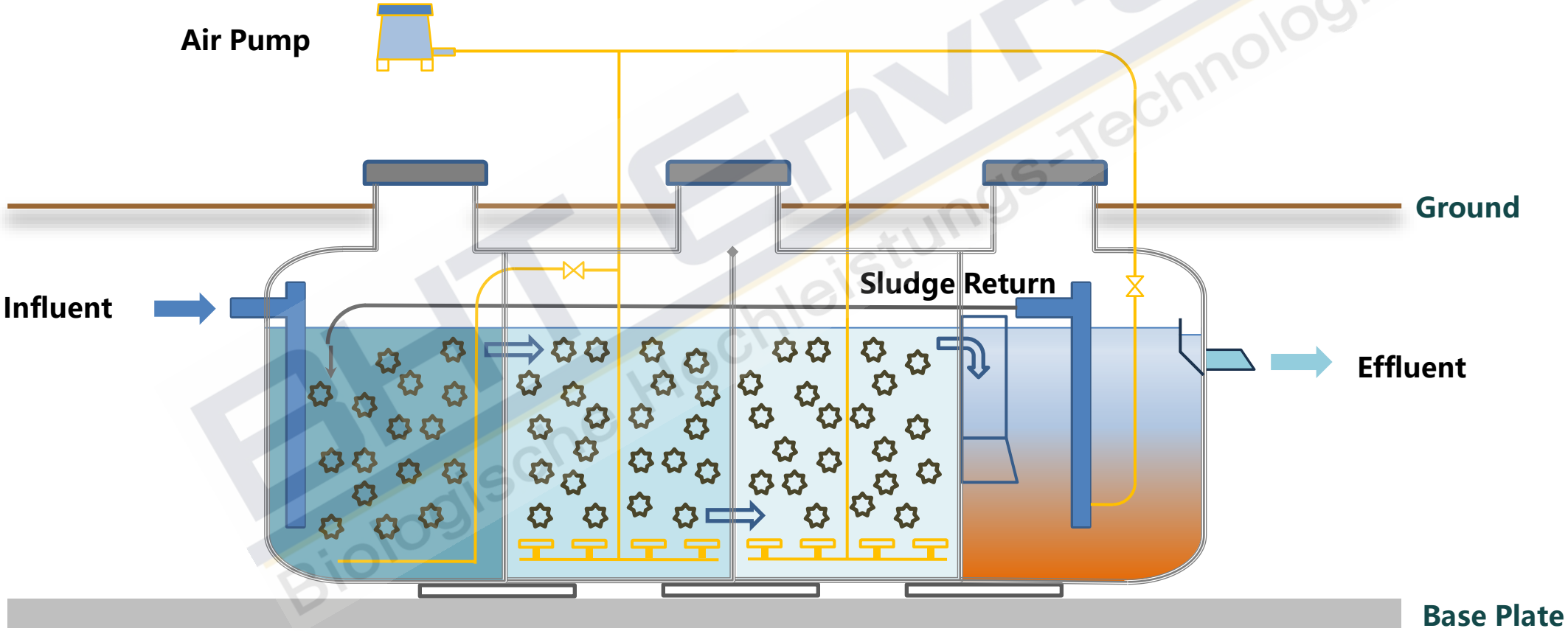
In response to the characteristics of inlet water in the Middle East, such as high COD and high ammonia nitrogen, the BioComb adopts the IFAS process combining biological selection and multi-stage MBBR. After solid-liquid separation in the sedimentation tank, the sewage meets the discharge standards. This process enhances sewage treatment efficiency and effectively ensures the effluent quality of the BioComb.



Technical Details ——Bio-media

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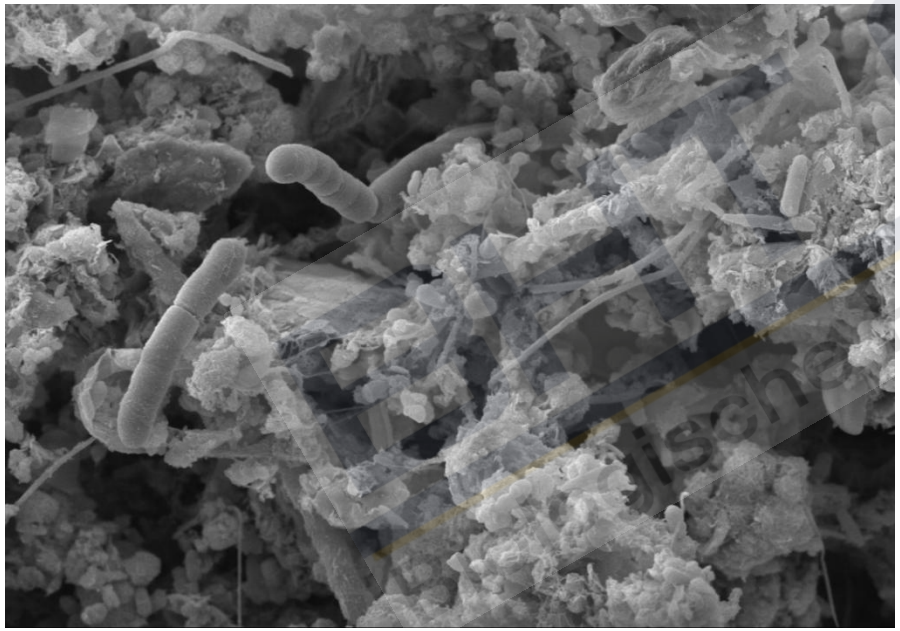
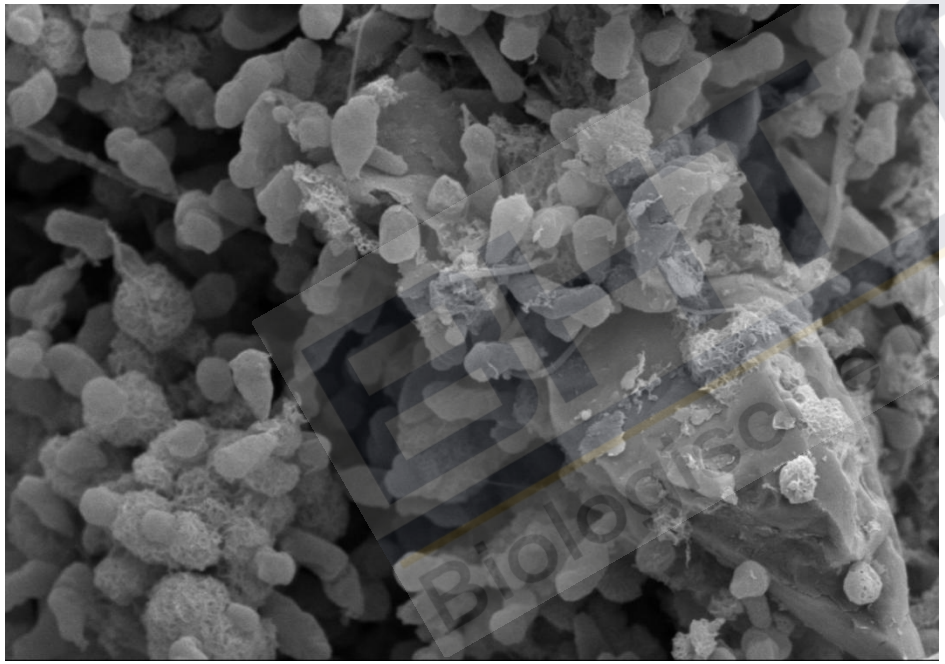


BioComb uses **modified MBBR** (Moving Bed Biofilm Reactor) packing, with a filling rate of 20%~50%. The parameters of the selected packing are as shown in the table below:

Indicator	Unit	data
Biofilm Formation Time	d	≤7
Specific Surface Area	m^2/m^3	520~1500
Density	g/cm^3	0.97~1.03
DO Rate	Condition	Anaerobic / Aerobic
Denitrification Rate	$g/(m^2 \cdot d)$	0.15~1
Nitrification Rate	$g/(m^2 \cdot d)$	0.5~2
BOD_5 Surface Area Loading Rate	$g/(m^2 \cdot d)$	5~15
Porosity	%	75
Service Life	year	≥15

Technical Details ——Bio-media

BioComb



BioComb offers hydrophilic sponge foam packing as an optional choice, with a filling rate of 20%~40%. The parameters of the selected packing are as shown in the table below:

Indicator	Unit	data
Biofilm Formation Time	d	3~7
Packing Material		Polyether Polyurethane
Specific Surface Area	m^2/m^3	4000~6500
Density	g/cm3	0.98~1.05
DO Rate	Condition	Anaerobic / Aerobic
Denitrification Rate	g/(m2·d)	0.15~1
Nitrification Rate	g/(m2·d)	0.5~2
BOD_5 Surface Area Loading Rate	g/(m2·d)	5~15
Porosity	%	96~98
Service Life	year	≥15

Technical Details —— SMC Molded Spliced Enclosure

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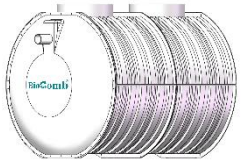
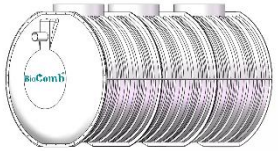
0.5~1 m³/d

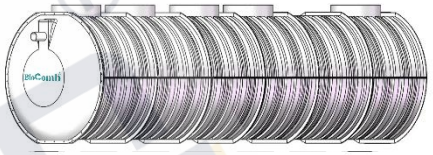
2 m³/d



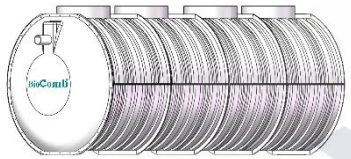
5 m³/d



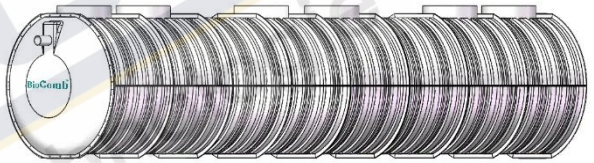
8 m³/d



15 m³/d



10 m³/d



20 m³/d

The enclosure of BioComb adopts the SMC molding process. Equipment with a capacity of 0.5~2 m³/d uses a two-piece enclosure, while large-sized equipment such as those with a capacity of 5~20 m³/d adopts a multi-piece enclosure. The four-piece enclosure solves the problem of limited volume of the two-piece enclosure. It can flexibly adjust the volume of the purification tank and the internal partitions by modifying the length of the purification tank. In addition, process parameters can be custom-adjusted according to the requirements of inlet and outlet water quality and quantity.

Equipment Model	Treatment Capacity (m³/d)	Equipment Dimensions (mm)	Maintenance Manhole (mm)	Power (W)	Main Material
BT-1	0.5~1	1909*1200*1166	Φ420*2	55	SMC Molded Spliced Enclosure
BT-2	2	2062*1392*1663	Φ630*2	110	SMC Molded Spliced Enclosure
BT-5	5	2525*1906*1914	Φ630*2	110	SMC Molded Spliced Enclosure
BT-8	8	3574*1906*1914	Φ630*3	170	SMC Molded Spliced Enclosure
BT-10	10	4624*1906*1914	Φ630*4	170	SMC Molded Spliced Enclosure
BT-15	15	6724*1906*1914	Φ630*5	220	SMC Molded Spliced Enclosure
BT-20	20	8824*1906*1914	Φ630*5	340	SMC Molded Spliced Enclosure

Technical Details— Operation and Maintenance Platform

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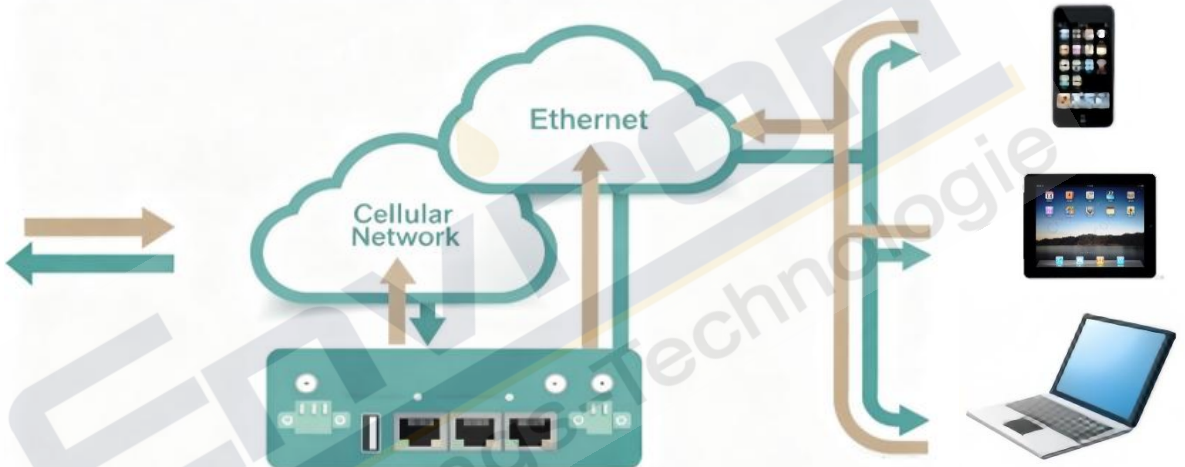

Remote Visual Management of Sites

Remote monitoring is implemented for subordinate sewage treatment stations. The distribution of subordinate stations and specific project locations are displayed via GIS maps, allowing access to the overview information of these stations. This enables real-time and comprehensive control over the overall operation and maintenance status of all stations, the on/off status of equipment, and the attendance of personnel and vehicles.

Real-time Management and Control of Production Safety

View the video stream data transmitted back by the cameras at each station in real time. Based on the operation status of the sewage treatment stations, control the camera pan-tilt heads in real time to monitor the operation conditions inside the sewage treatment stations and conduct real-time monitoring of the operating parameters.

Technical Details—Station Process Flow

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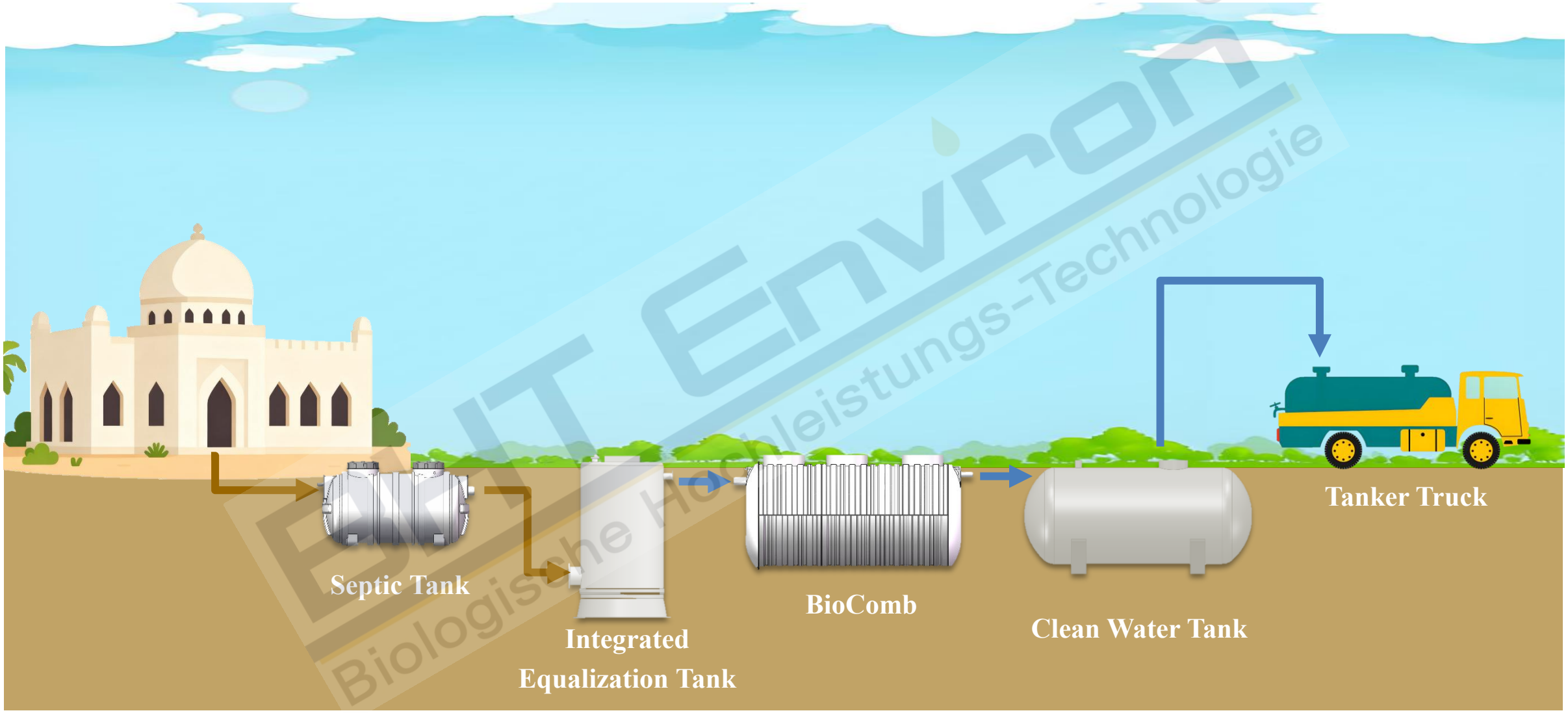

Technical Details — Integrated Regulating Tank

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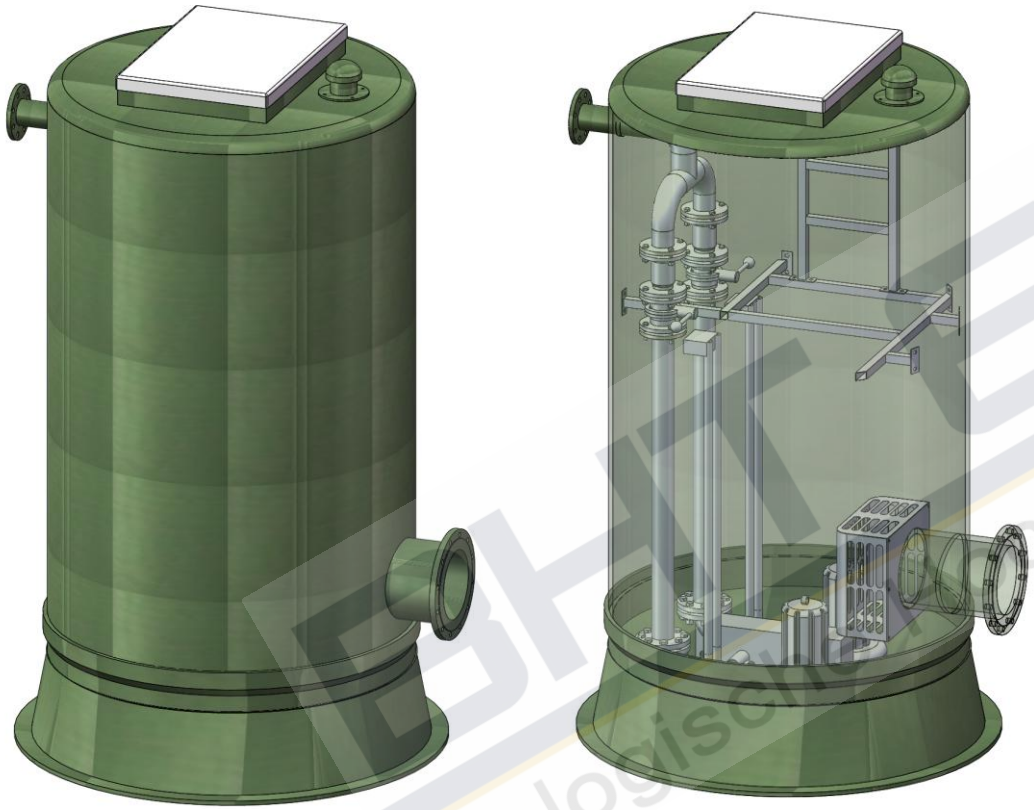


Integrated Regulating Tank, with its outer shell manufactured via the FRP (Fiber Reinforced Plastic) winding process.

◆ **Small Floor Space**

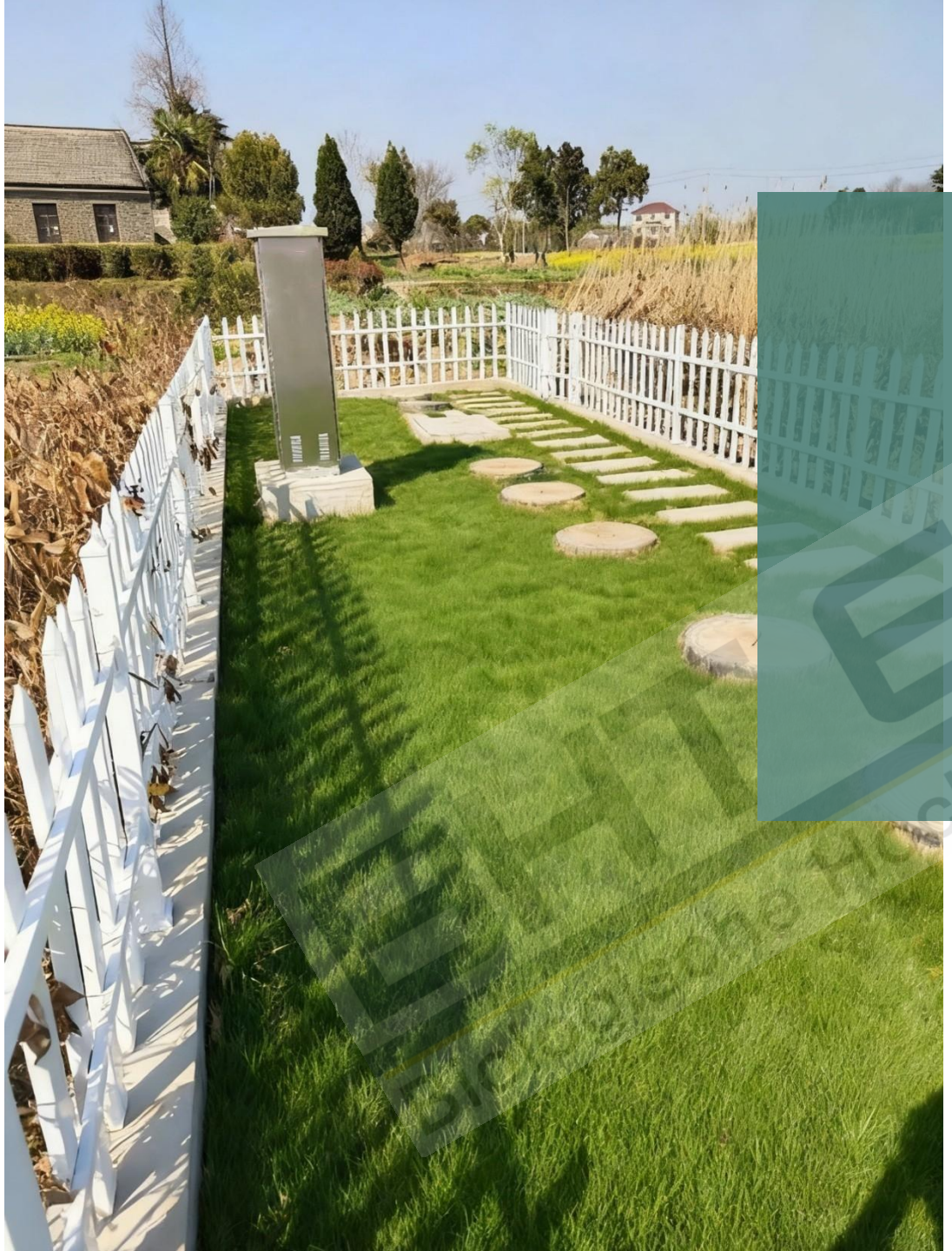
Compared with traditional pumping stations, the integrated prefabricated pumping station saves 1/3 floor space. It has high integration, is fully buried underground (blending well with surrounding landscapes), and has a unique automatic cleaning function to eliminate environmental pollution and cut land/civil construction costs significantly.

◆ **High Integration**

All components are pre-installed before delivery to maximize the cylinder's internal space. It can be equipped with electrical control devices as required, and a service platform is installed inside the cylinder.

◆ **Convenient Sludge Removal**

Integrated with a basket grid, it prevents pipe blockage, reduces impact on the biochemical treatment system, and enables fast, labor-saving sludge/slag removal.



THANK YOU

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