

BioFilter
Unpowered waste water treatment Plant



Jieming International Trading FZE

Revolutionary and innovative technology

Non-electric Non-maintenance Purification tank

Lean manufacturing
Effect guarantee
German quality
Patent escort 航

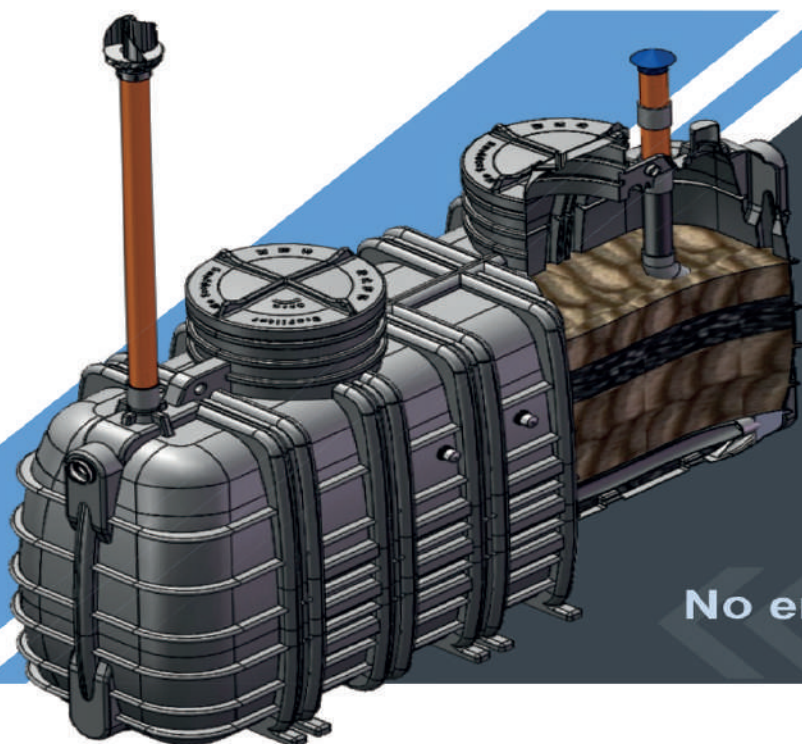


PRODUCT INTRODUCTION

Biofilter non-electric & non-maintenance purification tank

Wastewater is distributed into the biological reaction system through a unique distribution system (shaker bed), and the BioFilter media surface forms a biofilm. As the wastewater flows from top to bottom, pollutants are removed by the biofilm attached to the surface of the BioFilter media.

Through the aerodynamic principle, the system skillfully introduces the natural wind into the equipment, so that anaerobic, anoxic and aerobic multi-stage reaction occurs alternately in the tank. The system has good removal effect for COD, BOD, ammonia nitrogen and SS.



Maintenance-free

No energy consumption



Non-electric

Natural wind is introduced into the equipment for oxygenation and aeration through a Non-electric fan, and the effluent is discharged by gravity, without the need for power consuming equipment throughout the process.



Non Debug And Fast Startup

The BioFilter media has a specific surface area of $618,000 \text{ m}^2/\text{m}^3$, treated with special enzymes. After the wastewater flows through it, the media can quickly be covered with a biofilm. The water can be treated naturally within 7 days to achieve the desired treatment effect.



Non-maintenance, Acceptable Waterless Shutdown

No electric parts, no need to replace any parts, no need for professional maintenance. The BioFilter media can retain sufficient water, ensuring that the biological bacteria in the tank survive during long-term shutdown, so that the treatment effect can be quickly and automatically restored when the water is re-introduced.

BioFilter Authoritative Certification

With international En12566 and PIA certifications from 10 countries, Germany, France, Belgium, Switzerland, Italy, etc., dozens of patent certifications for domestic inventions and utility models have also been obtained, BioFilter products have been exported to various parts of the world. Currently, there has been more than 100,000 installed and operating wastewater treatment systems in China, Africa, Europe, the Middle East, Russia/CIS.



Model	BioFilter500		BioFilter1000		BioFilter2000	BioFilter3000	BioFilter5000	BioFilter7000	BioFilter10000
	A	B	A	B					
Capacity(t/d)	0.5	0.5	1	1	2.0	3.0	5.0	7.0	10.0
Number of households processed	1-2 households	1-2 households	3-4 households	3-4 households	7-8 households	12-13 households	18-20 households	25-30 households	35-40 households
Capacity PE	5-7 people	5-7 people	10-14 people	10-14 people	25-28 people	38-42 people	65-70 people	95-100 people	135-140 people
Size(mm)	2300x1000x1500	1000x1000x1500	2300x1000x1500	2300x1000x1500	1500x1200x2000	2200x1200x2000	2500x1200x2000	3700x1200x2000	4000x1200x2000
Weight(kg)	150	140	180	200	240	300	360	600	670

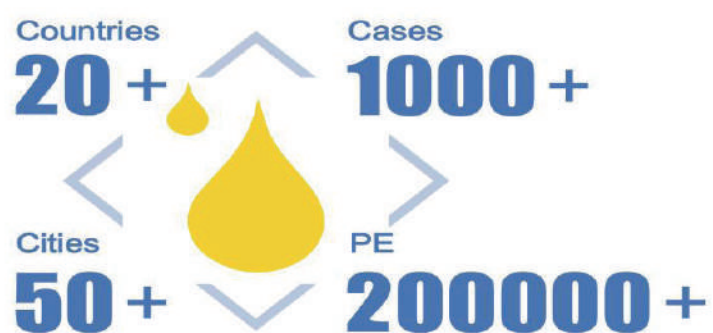
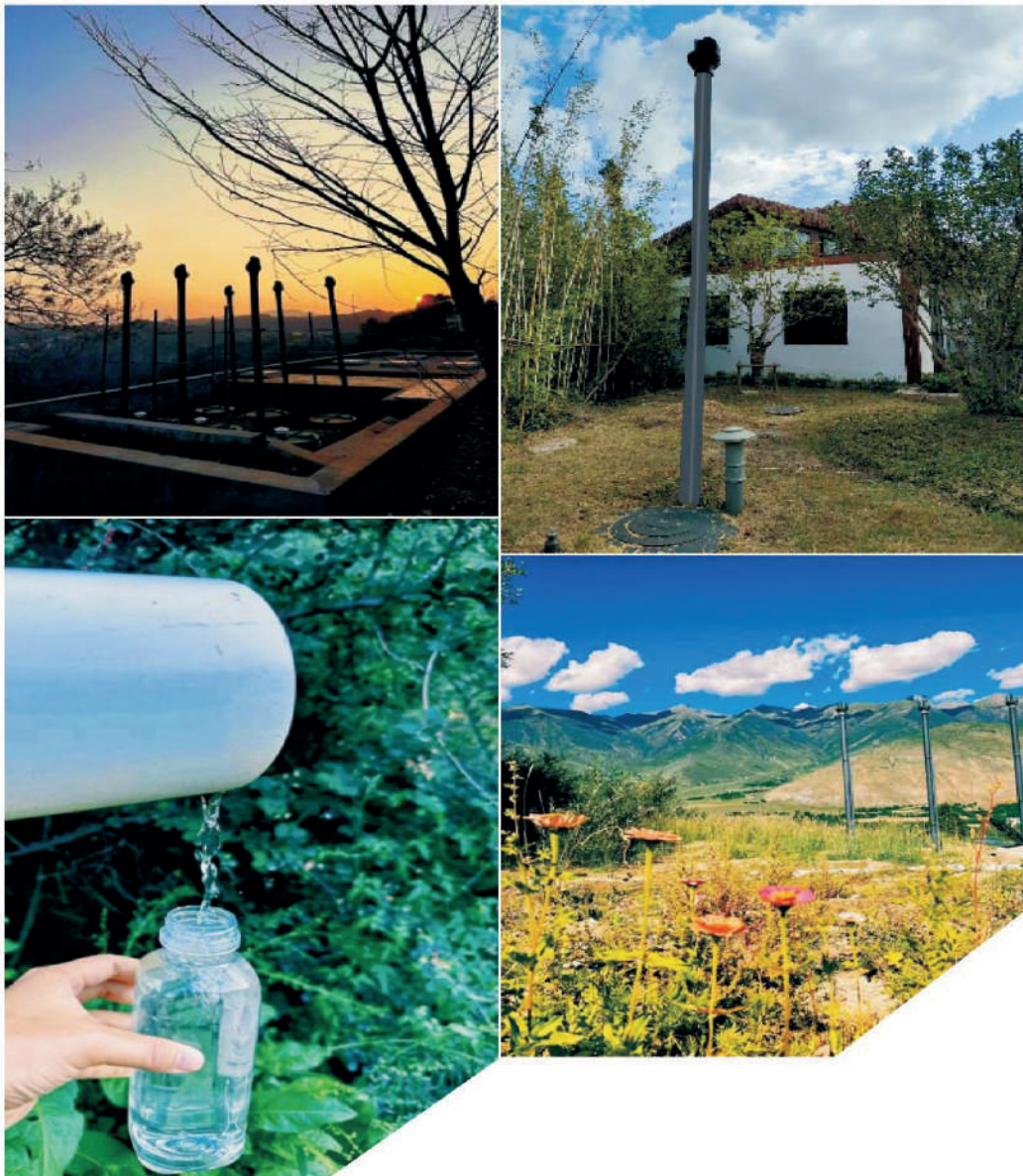
SELECTION TABLE

Model		Capacity (t/d)	Number of households processed	Capacity PE	Size (mm)	Weight (kg)
BioFilter 500	B	0.5	1-2 households	5-7people	1100x1150x1650	150
	A	0.5	1-2 households	5-7people	2500x1150x1650	220
BioFilter 1000	A	1.0	3-4 households	10-14people	2500x1150x1650	270
	B	1.0	3-4 households	10-14people	1349x1150x2193	220
BioFilter2000		2.0	7-8 households	25-28people	1349x1150x2193	250
BioFilter3000		3.0	12-13 households	38-42people	2250x1150x2325	450
BioFilter5000		5.0	18-20 households	65-70people	2250x1150x2325	480
BioFilter7000		7.0	25-30 households	95-100people	3800x1150x2325	680
BioFilter10000		10.0	35-40 households	135-140people	3800x1150x2325	750





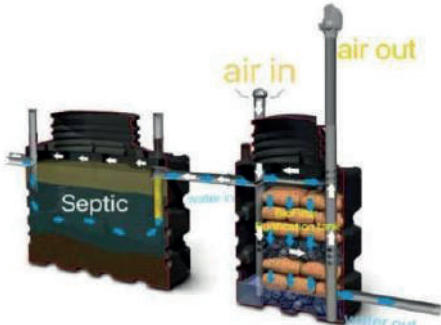
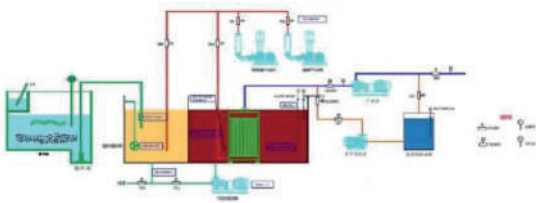


CASE DISTRIBUTION

- Domestic sewage treatment case in scenic areas
- Domestic sewage treatment case of enterprises
- The domestic sewage treatment case of the villa
- The domestic sewage treatment case in the park



Technical Comparison

No.	Index	BioFilter Purification Tank	MBR Integrated Equipment
1	Appearance diagram of the tank		
2	3D Stereoscopic Diagram		
3	Sewage treatment process		
		Simple	Complex
4	Material of the tank	HDPE; Better chemical stability, stronger corrosion resistance, and better compression resistance.	Carbon steel; Not wear-resistant, not resistant to high temperatures, easy to rust, not suitable for extreme environments.
5	Thickness of the tank	15mm	6mm

6	Capacity	500L/day,1000L/day,2000L/day ,3000L/day,5000L/day,7000L/day,10000L/day	900L/day,1200L/day,1500L/day,1800L/day,2700L/day
7	Electric Components	No electric components	EL-S 60 blower pump; Control unit
8	Electricity Requirement	No Electricity Required	0.8 kwh/day
9	Maintenance	Maintenance-Free	1-2 times/year
10	Purifying Performance	BOD ₅ ≥99% COD≥95% NH ₄ -N≥99% Total≥95%	BOD ₅ :98.2% COD:94.4% NH ₄ -N:99.5% Total:93.3%
11	warranty	30 years	10 years

According to the above comparison, the main advantage of BioFilter purification tank is that it has no Electric components, no electricity Requirement, no maintenance, and has good sewage treatment effect. Based on these excellent performance, BioFilter has been widely used in over 100,000 projects in dozens of countries worldwide, suitable for various terrains and climate zones.

Technical Comparison

No.	Index	BioFilter Purification Tank	SIDAR biological wastewater treatment plant
1	Appearance diagram of the tank		
2	3D Stereoscopic Diagram		
3	Sewage treatment process		
		Simple	Complex
4	Material of the tank	HDPE; Better chemical stability, stronger corrosion resistance, and better compression resistance	PP
5	Thickness of the tank	15mm	Thin

6	Capacity	500L/day,1000L/day,2000L/day ,3000L/day,5000L/day,7000L/day,10000L/day	900L/day,1200L/day,1500L/day,1800L/day,2700L/day
7	Electric Components	No electric components	EL-S 60 blower pump; Control unit
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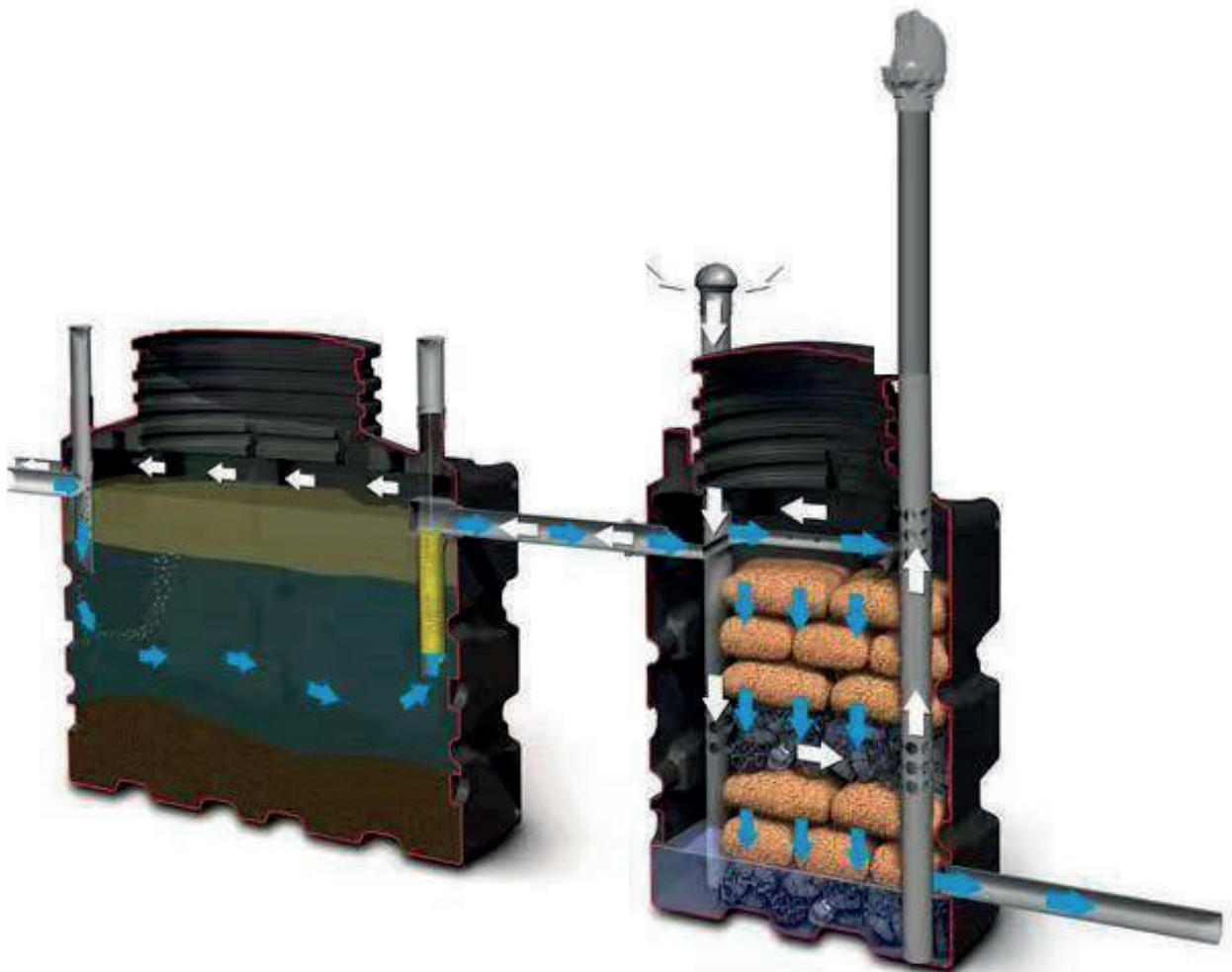
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Product principle

ClearFox ® Nature is a biofilm system with filtering effect, and its working principle is as follows:

Wastewater is evenly distributed through a unique water distribution system (shaker) and enters the biological reaction system. A biofilm is formed on the surface of the BioFilter nanoporous biocatalyst packing in the system. During the flow of wastewater from top to bottom, pollutants are attached to the biofilm on the surface of the BioFilter nanoporous biocatalyst packing for removal.

The aeration in the system cleverly introduces natural wind into the equipment through aerodynamic principles, resulting in alternating anaerobic, anoxic, and aerobic multi-stage reactions inside the tank. The product is suitable for COD BOD, Ammonia nitrogen and SS have good removal effects.



FEATURES

1. No electricity is needed, and the operating cost is almost zero;

The purification tank adopts a non powered fan, which introduces natural air into the equipment for oxygenation through the chimney effect, and the effluent flows naturally, thus eliminating the need for power consuming equipment.

2. Fast startup speed, no need for debugging;

BioFilter nanofiber biocatalyst packing is treated with special enzymes. After the sewage flows through, the packing can quickly be covered with biofilm, and the treatment effect can be achieved by natural water flow for 7 days.

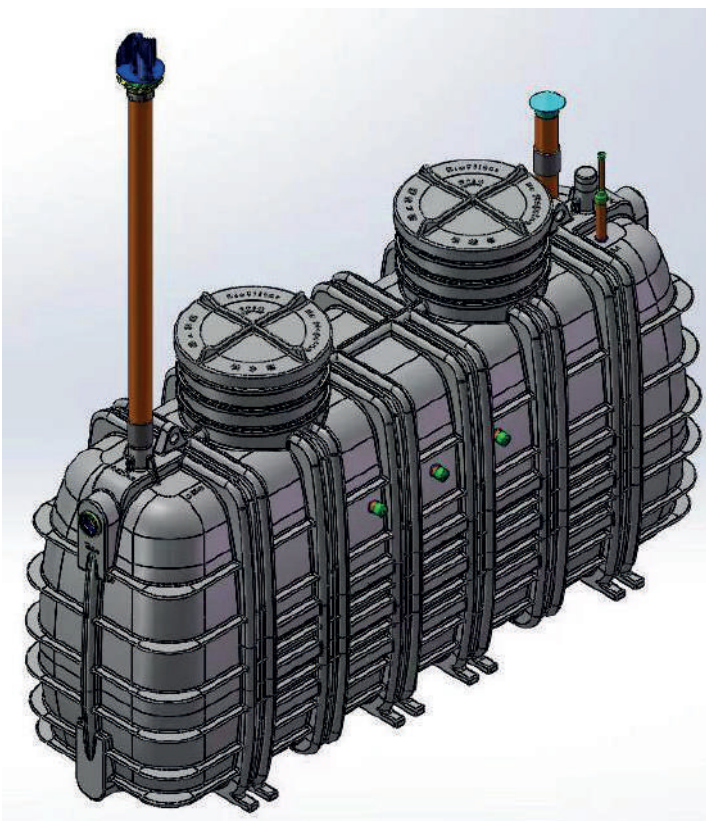
3. Can achieve long-term shutdown without raw water supply;

BioFilter nanofiber porous biocatalyst packing can retain sufficient moisture, ensuring the survival of biological bacteria in the tank when the equipment is shut down for a long time, so as to quickly and automatically achieve the treatment effect when water enters again.

4. No need for professional maintenance or replacement of components;

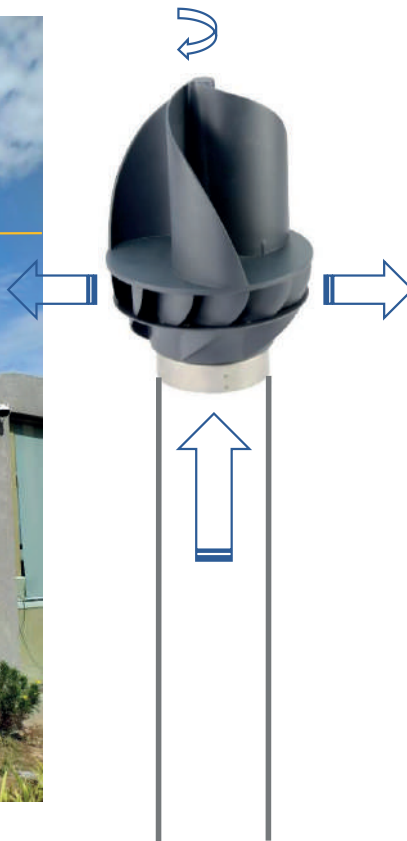
5. The processing effect is good.

BioFilter nanofiber biocatalyst packing can ensure that more biological bacteria adhere to the packing, thereby enabling rapid, stable, efficient, and thorough removal of pollutants from wastewater.

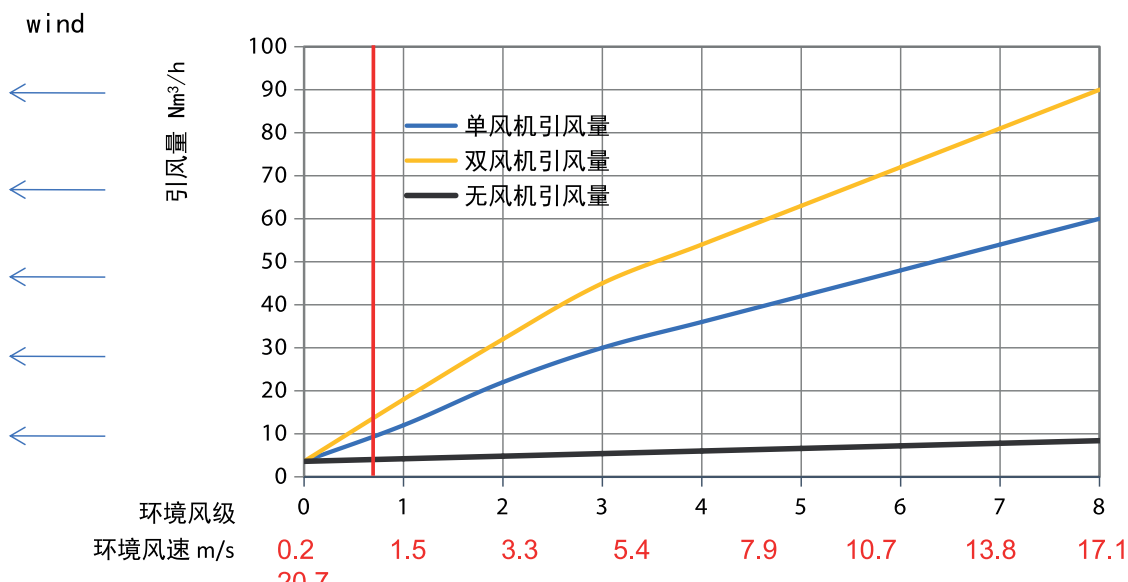


Product principle and introduction

High performance induced draft fan



追求**卓越** 砥砺前行



BioFilter uses a high-performance wind driven induced draft fan that can start when the ambient wind speed reaches 1m/s. Its excellent aerodynamic design can generate a large amount of induced draft air, allowing a large amount of oxygen rich air to penetrate the biological packing layer of the reactor and provide sufficient oxygen for microbial degradation of target pollutants.

Product principle and introduction

BioFilter
Unpowered waste water treatment Plant

Tank manufacturing - German standard

Material: HDPE high-density polyethylene;

Process: One time rolling molding;

Tank thickness: 15mm;

Tank body applicable: frozen soil layer thickness of 2m or more.



Specifications

**Typical model - BioFilter 500 0.5t/d
integrated septic tank purification tank**

model: BioFilter500 Including septic tank

size: 2500x1150x1650mm

capacity: 0.5t/d



NO	MODEL	CAPACITY/m ³	SIZE/mm	WEIGHT/kg
1	500	0.5	1100×1150×1650	150
2	1000	1.0	2500×1150×1650	180
3	2000	2.0	1349×1150×2193	240
4	3000	3.0	2200×1200×2000	450
5	5000	5.0	2250×1150×2325	480
6	7000	7.0	3800×1150×2325	680
7	10000	10.0	3850×1150×2325	750



Specifications

Typical model - BioFilter500 0.5t/d integrated septic tank purification tank

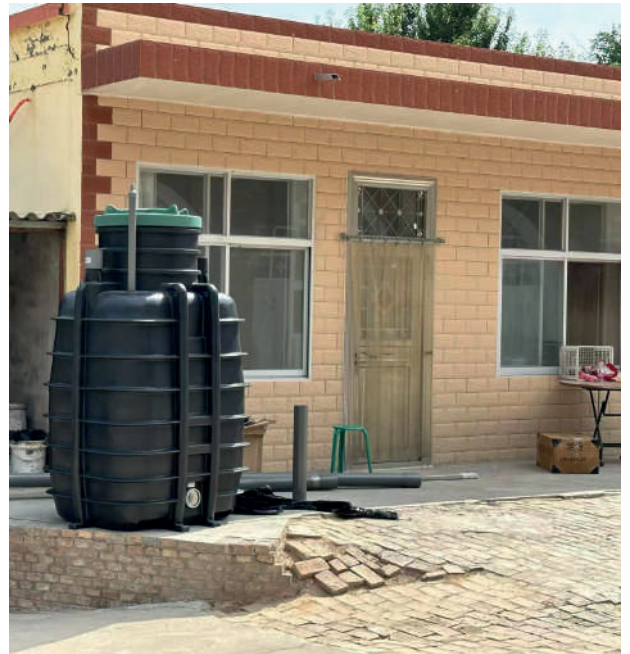
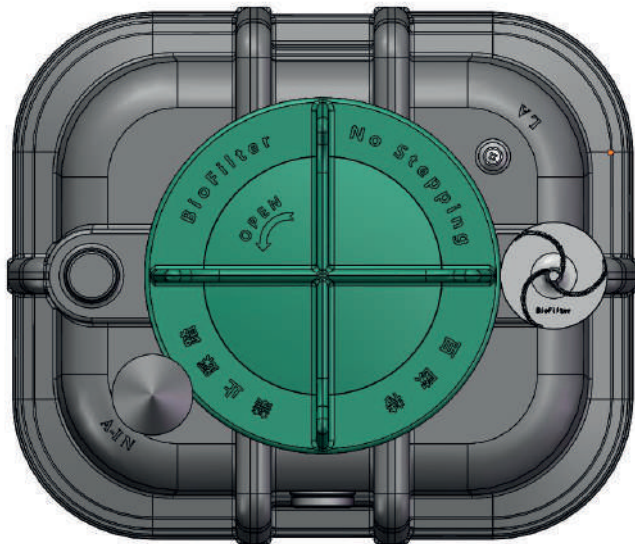


model: BioFilter500 Excluding septic tanks
size: 1100x1150x1650mm
capacity: 0.5t/d

Specifications

BioFilter
Unpowered waste water treatment Plant

Typical model - BioFilter 2000 2t/d



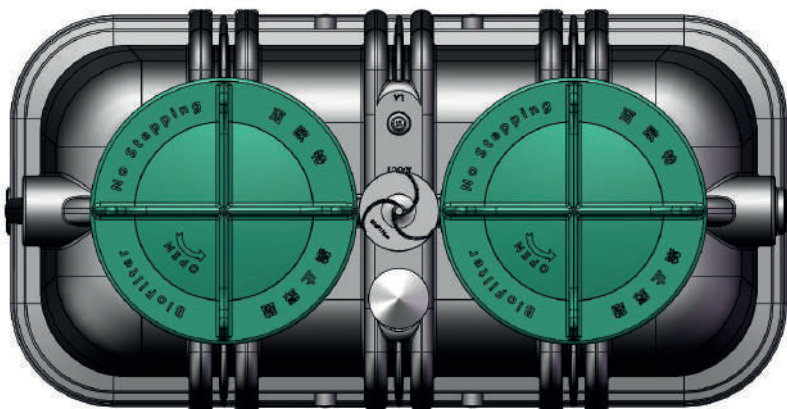
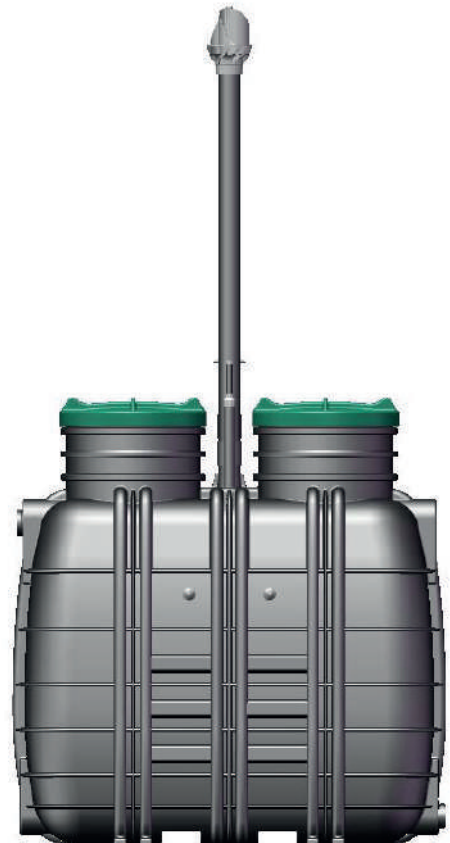
model: BioFilter2000
size: 1349x1150x2100mm
capacity: 2t/d



Specifications

BioFilter
Unpowered waste water treatment Plant

Typical model - BioFilter 3000 3t/d



model: BioFilter3000
size: 2250x1150x2100mm
capacity: 3t/d



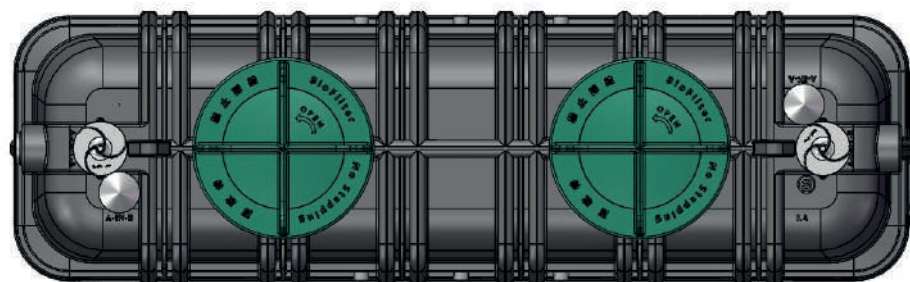
Specifications

BioFilter
Unpowered waste water treatment Plant

Typical model - BioFilter 7000 7t/d



model: BioFilter7000
size: 3800x1150x2300mm
capacity: 7t/d





PERFORMANCE RESULTS

PPU Umwelttechnik GmbH

Bernecker Str. 73, 95448 Bayreuth, Germany

EN 12566-6

Small wastewater treatment systems for up to 50 PT
Secondary treatment unit of the small wastewater treatment system
ClearFox® Nature bioreactor
Biofilm filter bed system in a polyethylene tank

Nominal organic daily load	0.18	kg/d		
Nominal hydraulic daily load	1.20	m³/d		
Treatment efficiency (nominal sequences)		Efficiency	Effluent	
	COD	67.1 %	84 mg/l	
	BOD ₅	82.1 %	26 mg/l	
	NH ₄ -N*	60.4 %	16 mg/l	
	SS	65.6 %	36 mg/l	
Electrical consumption	0.0	kWh/d		

* determined for temperatures ≥ 12°C in the bioreactor

Performance tested by:

PIA – Prüfinstitut für Abwassertechnik GmbH
(PIA GmbH)
Hergenrather Weg 30
D-52074 Aachen

This document replaces neither the declaration of performance nor the CE marking.



Prüfinstitut für Abwassertechnik GmbH
geprüft - tested - teste

Notified Body number 1739: Certified according to ISO 9001:2008

Einar Lancel

September 2014

Obtained international certifications from 10 countries: Germany, France, Belgium, Switzerland, Italy, etc. ClearFox® Our products have been exported to various parts of the world. Currently, there are over 100000 installed and operational sewage treatment systems in China, Africa, Europe, the Middle East, Russia / CIS.



GUNG

Bescheinigung Nr. 185B40.A14
Bestätigung der Option auf Baureihenerweiterung
EN 12566-3 und -6 der Kleinkläranlage Clearfox® Nat

PPU Umwelttechnik GmbH
Carl-Kolb-Straße 6
95448 Bayreuth

Aachen, 25. Mai 2022

Martina Wermter
PIA GmbH
Prüfinstitut für Abwassertechnik
Hergenrather Weg 30
52074 Aachen
GERMANY

Dipl.-Ing. Martina Wermter

Bereichsleiterin "Europäische Prüfungen"

Product Certification- Tank and Packing Testing

BioFilter
Unpowered waste water treatment Plant



检测报告



报告编号: BSTDGF111235628081501CR

日期: 2023 年 08 月 15 日

页码: 第 1 页 共 15 页



检测报告

报告编号: BSTDGF111235628081501CR

日期: 2023 年 08 月 15 日

页码: 第 4 页 共 15 页

序号	检测项目	技术指标	检测结果	判定
1.	尺寸	3950x1200x2300mm	3950x1200x2300mm	合格
2.	厚度	12.0-14.0mm	12.0-14.0mm	合格
3.	外观	外观平整,无毛刺	符合要求	合格
4.	耐酸性	依据 GB/T 2423.17-2008 产品环境试验 第 2 部分: 试验方法 试验 Ka: 盐雾 试样应表面无生锈、无发黄、无开裂、剥落等不良现象	符合要求 见表 1	合格
5.	耐碱性	试验 24 小时后, 样品应无变色、起泡、剥落、粉化、软化等现象。	符合要求 见表 2	合格
6.	耐低温	依据 GB/T2423.1-2008 电工电子产品环境试验 第 2 部分 试验方法 试验 A: 低温, 试样表面应无明显的损坏和变化	符合要求 见表 3	合格
7.	耐老化	依据 GB/T 16422.2-2022 塑料 实验室光源暴露试验方法 第 2 部分: 氙弧灯, 产品应无变色, 无龟裂, 无变形。	符合要求 见表 4	合格

Obtained certification from a third- party authoritative organization with national CMA and CNS certifications for tank thickness (15mm), low temperature resistance, corrosion resistance, load-bearing and compressive testing, and tested the specific surface area of the core packing inside the equipment, with a packing specific surface area of 6.18x105m2/m3.

编号: XBD-CS-2023080667

第 4 页, 共 6 页

测试结果:

序号	测试项目	测试单位	测试结果	参考标准
1	比表面积	m ² /m ³	6.18×10 ⁵	GB/T13390-2008
备注	仪器信息： BET (麦克 ASAP2460)			
本表格结束				

Product Certification- patents **BioFilter** Unpowered waste water treatment Plant



The dozens of patents we have continuously added domestically are the best proof of our commitment to rooted projects, innovation, and continuous refinement and optimization of our products.

Cases sharing

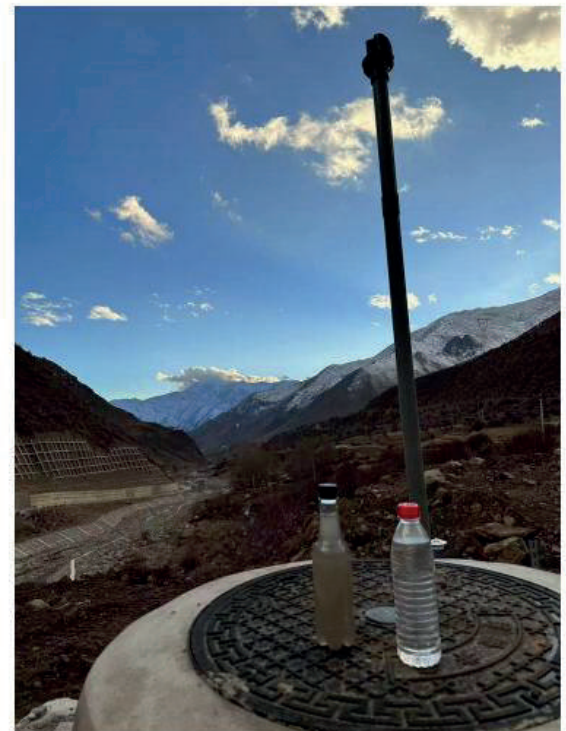
Bio Filter PURE YOUR WATER PURE YOUR LIFE

Governance effectiveness

Entrusting a third-party testing agency to conduct water quality testing, the results show that the effluent of this village case project meets the third level discharge standard of Sichuan Province's "Water Pollution Discharge Standards for Rural Domestic Sewage Treatment Facilities" (DB 51/2626-2019), as shown in table :

Comparison of Inlet and Outlet Water Quality of Non powered Maintenance free Purification Tanks in Village

Name	pH	COD	SS	Ammonia Nitrogen	Total Phosphorus
Inlet	6-9	350	80	50	5
Outlet	6-9	35	10	5	3
Landmark Level 3	6-9	100	40	25	4



Cases sharing

Bio Filter

PURE YOUR WATER PURE YOUR LIFE

CASES REVIEW

Mianning County, Liangshan Yi Autonomous Prefecture, Sichuan Province

—Non powered purification tank treatment+agricultural utilization

This case mainly deals with the daily domestic sewage of 24 households with a population of 108 in Guoyuan Village. Previously, Guoyuan Village had completed toilet renovation, and the toilet type was water flushing. Collect the daily washing water and toilet flushing sewage generated by villagers through the sewage pipe network and enter the septic tank. Then, enter the self oxygenation non powered maintenance free purification tank for treatment and meet the standards before irrigating the farmland.

The design scale of the sewage treatment facility is 5t/d, and the effluent complies with the third level discharge standard of Sichuan Province's "Water Pollution Discharge Standards for Rural Domestic Sewage Treatment Facilities" (DB 51/2626-2019). The effluent is used for daily irrigation of nearby farmland and vegetable gardens.



Cases sharing

Bio Filter

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Technical Mode

1. Selection of technical mode

Taking into account factors such as the relative concentration of personnel in Guoyuan Village and the ease of laying pipeline networks due to the terrain and topography, it has been decided to adopt a centralized governance model. By fully utilizing wind energy resources, without connecting to village electricity, and without the need for professional maintenance, self oxygenation, non powered, and maintenance free purification tanks are used to treat rural domestic sewage to meet standards and irrigate nearby farmland in the greenest, low-carbon, and environmentally friendly way possible, achieving the resource utilization of rural domestic sewage and the green development of agriculture.

2. Sewage collection

Adopting a rainwater and sewage diversion drainage mode. Collect the daily washing water and toilet flushing sewage generated by villagers through the sewage pipe network, and then enter the septic tank, and then enter the self oxygenation non powered maintenance free purification tank for treatment.



Cases sharing

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Technical Mode

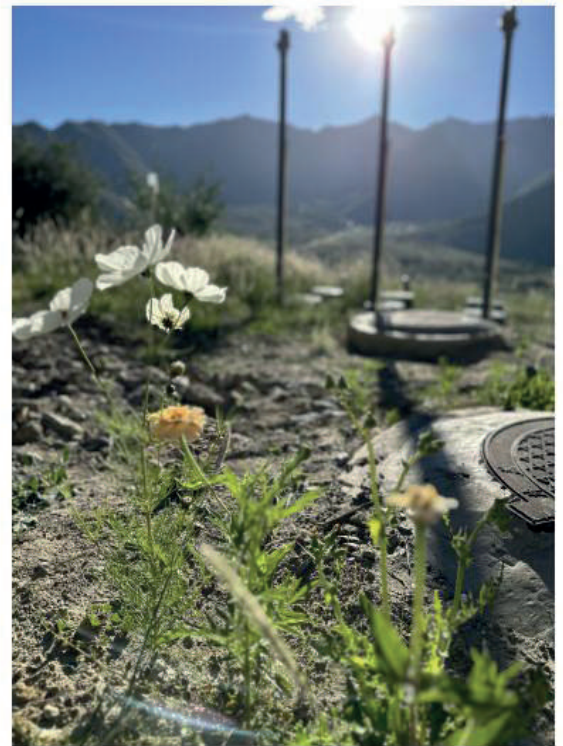
3. Sewage treatment

The treatment facilities include one set of tempered glass septic tanks, one set of 5t/d self oxygenation non powered maintenance free purification tanks, and one clean water collection tank. The process flowchart of this case is shown in Figure 2-1.

In an unpowered maintenance free purification tank, sewage is filtered through a cloth droplet in the first biological layer, and pollutants in the sewage are degraded by the biofilm grown on the filler (sintered body); After passing through the first biological layer, the sewage flows through the ventilation layer, comes into full contact with oxygen, permeates to the second biological layer, and is further purified before being discharged. The ventilation layer is located in the middle of the tank, and the biofilm is distributed on the packing. Anaerobic, anoxic, and aerobic reactions alternate inside the tank to achieve the removal of pollutants.

4. Resource utilization

The sewage is treated by a non powered maintenance free purification tank and flows into a clean water collection tank. Local households use it as irrigation water for local farmland and vegetable gardens, achieving the resource utilization of rural domestic sewage and green agricultural development.



Cases sharing

Bio Filter

PURE YOUR WATER PURE YOUR LIFE

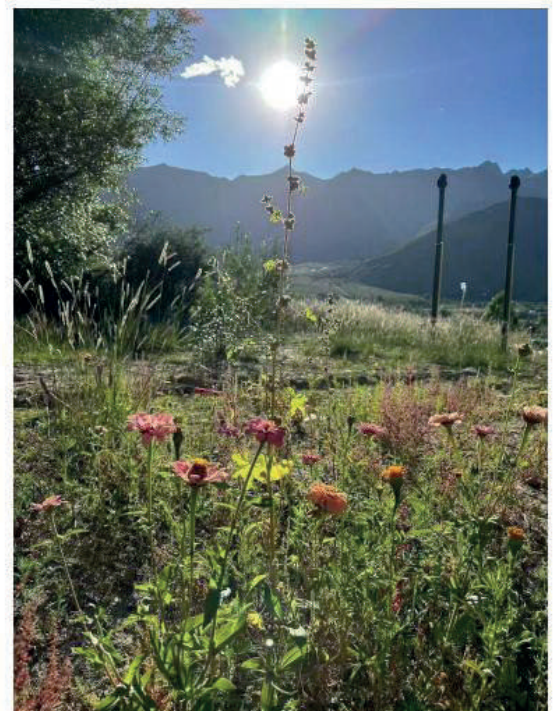
Operation and maintenance

1. Operation and maintenance entity

Public treatment facilities (such as centralized sewage collection pipelines and non powered purification tanks) are operated and managed by the village committee themselves.

2. Operation and maintenance expenses

This project fully utilizes the terrain advantages of the mountainous area, and there are no power, chemical, or maintenance costs during operation and maintenance.





Focusing on Quality and Quality, Win the Future Together



Jieming International Trading FZE