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集装箱一体化污水处理设备

Compact Unit Reactor of WWTP

集装箱式一体化污水处理设备

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简介

集装箱式一体化污水处理设备采用标准集装箱货柜，运输快捷方便，单套设备处理能力50~100m³/d。

针对农村/生活污水水质特性而研发，主要采用A²/O + MBBR污水处理工艺，处理效率高，出水水质稳定，处理后污水水质达到《城镇污水处理厂污染物排放标准》

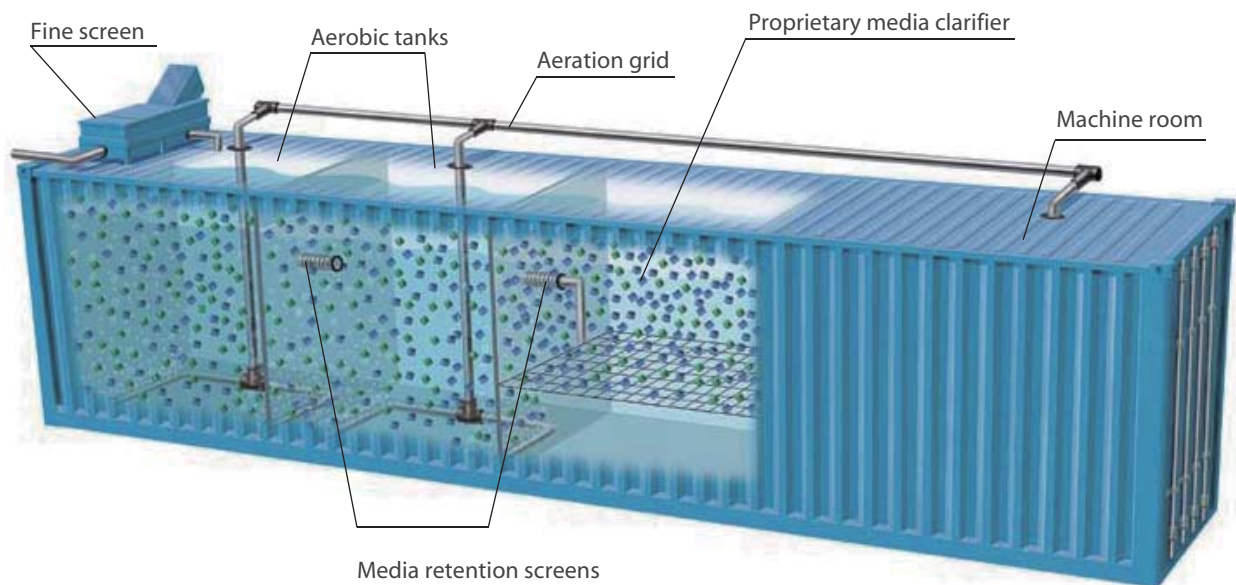
(GB18918-2002)一级A/B标的排放标准。

Introduction

The Compact Unit Reactor of WWTP adopts standard container containers, which is quick and convenient to transport, and the processing capacity of a single set of equipment is 50~100m³/d.

Developed according to the water quality characteristics of rural/domestic sewage, mainly adopting A²/O + MBBR sewage treatment process, with high treatment efficiency and stable effluent quality. The treated sewage quality meets the "Emission Standards for Pollutants in Urban Sewage Treatment Plants".

(GB18918-2002) The emission standard of the first-class A/B standard.



特点

- 紧凑型装置，体积小巧
- 提高处理能力
- 完全去除固体
- 改善了沉降特性
- 在较高悬浮生物量下操作
- 浓度导致污泥停留时间长
- 增强过程稳定性
- 低水头损耗，低噪音
- 无需过滤器通道
- 无需定期反冲洗
- 减少污泥产量，不会出现污泥膨胀问题

Features

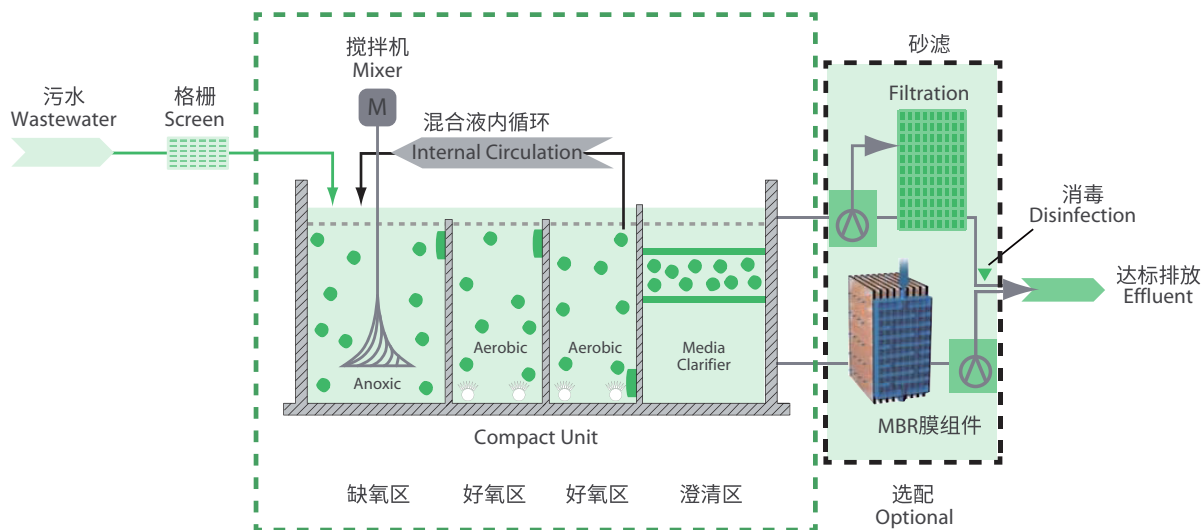
- Compact units with small size
- Increased treatment capacity
- Complete solids removal
- Improved settling characteristics
- Operation at higher suspended biomass
- Concentrations resulting in long sludge retention times
- Enhanced process stability
- Low head loss, low noise
- No filter channeling
- No need of periodic backwashing
- Reduced sludge production and no problems with sludge bulking



处理工艺 Technique process

AO 工艺 + MBR 生物膜：AO 工艺具有除碳和脱氮除磷的作用。膜生物反应器（MBR）是高效膜分离技术与活性污泥法相结合的新型水处理工艺。结合该两种工艺可以进一步拓展一体化设备应用范围，在城市污水处理中水回用得到更广泛的应用。独特的 MBBR 工艺可以增加生物处理效果，有效提高处理效率、减少系统污泥产生量。

AO Process + MBR Biofilm: The AO process has the functions of carbon removal and nitrogen and phosphorus removal. The membrane bioreactor (MBR) is a new type of water treatment technology combined with high-efficiency membrane separation technology and activated sludge method. The two processes can further expand the application range of integrated equipment. Water reuse in urban sewage treatment is more widely used. The unique MBBR process can increase biological treatment efficiency, effectively improve treatment efficiency and reduce system sludge production.



MBBR 工艺原理 MBBR process principle

运用生物膜法的基本原理，充分利用了活性污泥的优点，又克服了传统活性污泥法及固定式生物膜法的缺点。该方法通过向反应器中投加一定数量的悬浮载体，提高反应器中的生物量及生物物种，从而提高反应器的处理效率。由于填料密度接近于水，所以在曝气的时候，与水呈完全混合状态，微生物生长的环境为气、液、固三相。

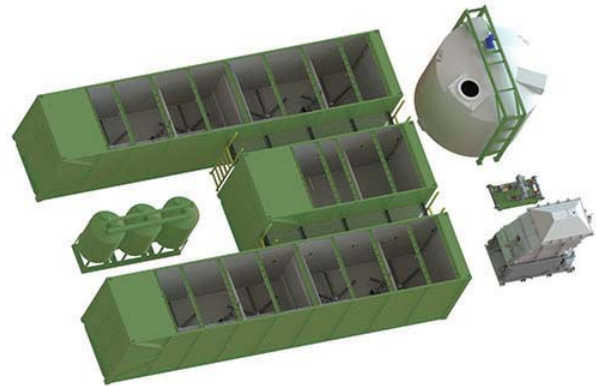
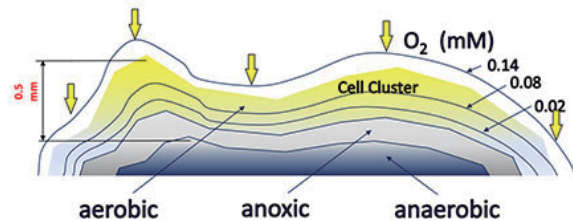
Using the basic principles of the biofilm method, the advantages of activated sludge are fully utilized, and the shortcomings of the traditional activated sludge method and the fixed biofilm method are overcome. The method increases the treatment efficiency of the reactor by adding a certain amount of suspension carrier to the reactor to increase the biomass and biological species in the reactor. Since the packing density is close to that of water, it is completely mixed with water during aeration, and the environment in which microorganisms grow is gas, liquid, and solid three phases.

MBBR 工艺特点 MBBR process features

- 处理负荷高，容积负荷是传统的 2~4 倍。
 - 氧化池容积小，降低了基建投资。
 - MBBR 工艺中可不需要污泥回流，不需反冲洗设备，减少了设备投资，操作简便，降低了污水的运行成本。
 - MBBR 工艺污泥产率低，降低了污泥处置费用。
 - MBBR 工艺中不需要填料支架，直接投加，填充率 10%~70%，节省了安装时间和费用。
- The processing load is high, and the volume load is 2 to 4 times that of the conventional one.
 - The oxidation tank has a small volume, which reduces infrastructure investment.
 - In the MBBR process, sludge backflow is not required, no backwashing equipment is required, equipment investment is reduced, operation is simple, and the operating cost of sewage is reduced.
 - The MBBR process sludge yield is low, which reduces sludge disposal costs.
 - In the MBBR process, no filler bracket is needed, and the filling rate is directly added, and the filling rate is 10%-70%, which saves installation time and cost.



氧气向细胞团扩散 Diffusion of O₂ into the Cell Cluster



技术优势

- 远程监测、控制，无人值守
- 标准集装箱式货柜设计，运输快捷方便
- 套装化设备，安装维护简单
- 土建投入费用低，运行维护费用低
- 环境友好，噪音低
- 模块化设计，可串并联
- 处理效果好，抗冲击力强
- 严格执行产品设计，制造质量控制标准

Technical advantage

- Remote monitoring, control, unattended
- Standard containerized container design, fast and convenient transportation
- Packaged equipment, easy to install and maintain
- Civil construction investment costs are low, operation and maintenance costs are low
- Environmentally friendly, low noise
- Modular design, can be connected in series and parallel
- Good treatment effect and strong impact resistance
- Strict implementation of product design, manufacturing quality control standards

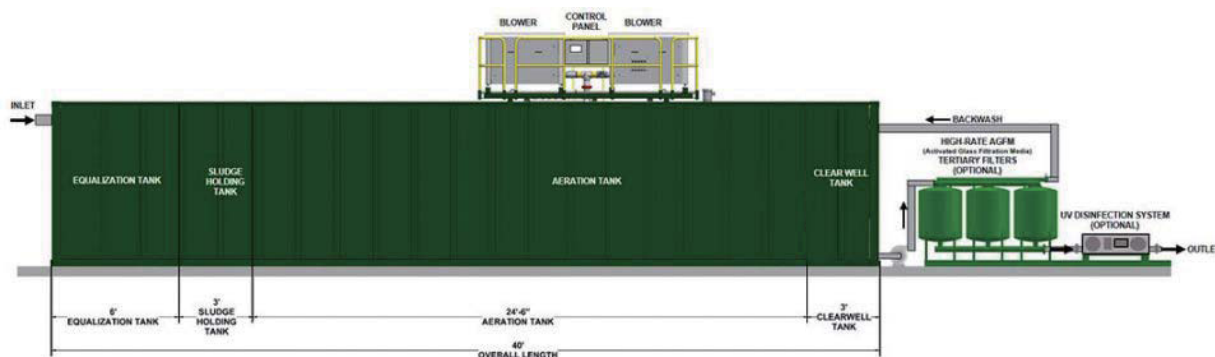
应用 Applications

- 农村/乡镇生活污水处理、无市政官网景区生活污水处理
- 适宜住宅小区、办公楼、商场、宾馆、饭店、机关学校、部队、工厂等生活污水。
- 与之相似的工业有机废水，如纺织、啤酒、造纸、制革、食品、化工等行业的有机污水处理。
- 黑臭水体控源截污等
- Rural/township domestic sewage treatment, no municipal official website scenic area domestic sewage treatment
- Suitable for residential quarters, office buildings, shopping malls, hotels, restaurants, government schools, military units, factories and other domestic sewage.
- Similar industrial organic wastewater, such as organic wastewater treatment in textile, beer, paper, leather, food, chemical and other industries.
- Black odor water body control source interception, etc.

MBBR Model Diagrams



40 英尺集装箱一体化污水处理设备 40 Ft, Compact Unit Reactor of WWTP



规格型号 Specification type

型号 Type	集装箱式一体化污水设备 Compact Unit Reactor of WWTP			
	CWU-50	CWU-100	CWU-150	CWU-200
进水水质 Influent quality	典型生活污水 Typical domestic wastewater (COD≤400mg/L, BOD ₅ ≤250mg/L, NH ₃ -N≤35mg/L, TN≤50mg/L, TP≤5mg/L, SS≤200mg/L)			
出水标准 Effluent standard	GB18918-2002一级A/B (First level A/B)			
处理工艺 Technical process	AO-MBBR			
日处理量 Treatment capacity	50m ³ /d	100m ³ /d	150m ³ /d	200m ³ /d
设备尺寸 Equipment dimensions	20尺标准集装箱高柜×1 20 Ft standard container ×1	40尺标准集装箱高柜×1 40 Ft standard container ×1	20尺标准集装箱高柜×1 +40尺标准集装箱高柜×1 20 Ft standard container ×1 +40 Ft standard container ×1	40尺标准集装箱高柜×2 40 Ft standard container ×2



MH 双曲面搅拌机

MH hyperboloid mixer

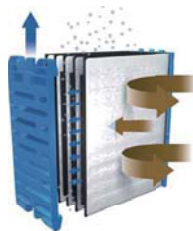


特点 Features

- 与传统的桨叶搅拌相比，具有混合均匀、效率高、能耗低、无死角的特点。
 - 结构简单，便于安装维护。
 - 对于各种水处理工艺中水体搅拌、化学药剂的混合搅拌效果更为突出。
 - 大比表面积叶轮，配备功率小，节能。
- In comparison with traditional blade paddle mixer, MH has the feature of mixing equality, high efficiency, low energy consumption and no 'dead zones'.
 - Simple structure and easy for installation and maintenance.
 - Used especially for the water treatment such as mixing of waste water and chemical agents.
 - Big surface area impeller, equipped with small power, saving energy.

MBR膜生物反应器

MBR membrane bioreactor



特点 Features

- 持续通量可达30l/m²h。
 - 可快速轻易清洗的全反洗能力。
 - 专利镭射焊接工艺，保证高水平的结构刚性和耐久性。
 - 专利过滤滤板保证压力分布均匀一致。
 - 模块化，可堆叠使空间需求降低，填充密度高达185m²/m³。
 - 低能耗成本。
 - 维护简单。
- Sustained flux up to 30 l/ m² h
 - Full back flushing capability allows quick and easy cleaning
 - Patented laser welding process ensures highest level of structural integrity and durability
 - Patented filter plate ensures a uniform distribution of pressure
 - Modular, stackable and thus minimal space requirement, high packing density of 185 m²/m³
 - Low energy costs
 - Easy maintenance

SRB 沉水式罗茨鼓风机

SRB submersible roots blower

特点

Features

■ 低噪音

鼓风机在运转中，因放在水中，故声音在空气和水的介面被折射入水里，而不传入空气中，同时水与槽壁也同样折射回去而达到降低噪音的效果。适用于学校、大楼、小区、医院等。

■ Low noise

Because the blower is installed under water, the operating noises reaching the surface of water are refracted into water instead of air. Meanwhile, water and tank walls also refract the noises intowater. In this way, noises are effectively reduced. SRB series will be applied to school, building, community and hospital.

■ 安装简便

主体不须固定底座、配管短。水中型鼓风机置于水中，故不需另制作隔音罩或隔音厂房，同时鼓风机置放在水槽中，不占用空间，所以能有效利用空间。

■ Easy installation

SRB series are not necessary to fix on foundation, saving piping cost. Being installed under water, so there is no need to add a soundproofing cover or build a soundproofing factory. Besides, since it is installed in a water tank, it doesn't occupy space. The work place can be utilized more efficiently.

■ 低故障

沉水鼓风机采用直接式动力传导，不须皮带轮，减少故障。

■ Less trouble

It is not necessary for belt and pulley because SRB series design directly drive system for raising high efficiency and reducing failure factor.

■ 电动机

使用鼠笼式感应电动机，F级绝缘，防护等级IP68。在电动机中加装过热保护器，对过载、温升等状况自动进行检测，避免由于电动机过热造成电机烧毁。

■ Motor

Using squirrel-cage induction motor, with F class insulation and IP68 motor protection grade. Build-in leakage detector in motor, can pervert the motor from burning out, overload & overheating.

■ 过滤装置

型式为干式，可承受突增压力及吸力而不变形，过滤器的面积设计为鼓风机风量的1.2倍，使压损不会大于25mmAq。

■ Filtration device

Dry type. It won't distort even by sudden pressure rise or absorption force. The area of filtration device is 1.2 times than the capacity of blowers. It can control the pressure loss less than 25mmAq.

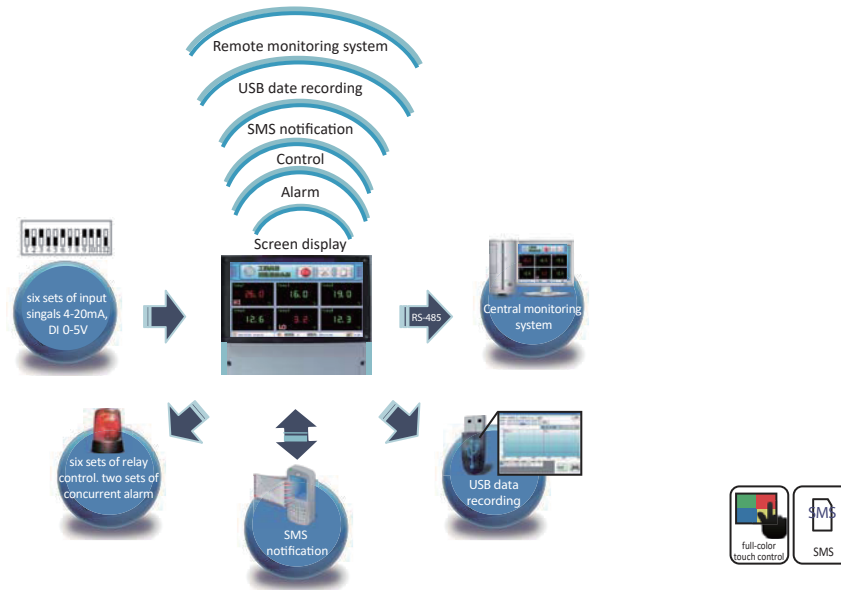


控制系统

采用 PLC 作为控制核心元件，触摸屏作为人机交换界面，人性化，智能化程度高。配有 EP6 远程通信模块，档设备出现故障会将信息传送到管理员手机上。管理员也可远程控制设备的启动和停止，来改变设备的运行状态。

Control system

Using PLC as the core component, touch screen as interface, highly humanality&intelligence degree is high. Equipped with EP6 remote communication module, when the device fails to transmit information to the administrator on the phone. Can remote control equipment start and stop, to change the operating status of the device.



EP6特点

- 智能模块涵盖2G~5G的功能
- 在不停机的情况下，简单操作便可交换控制程序
- 实现实时云端监控、数据收集
- 按频道指定多人分层式的手机短信报警通知管理
- 现场断电时短信通知
- 可设置发送短信前先电话响铃、复位短信通知、持续发送多次异常报警等功能
- 无网络时，手机拨号查询机台状态
- 网络收集最新的100组异常纪录备查
- 连接中央集成管理软件，可实现各频道异常统计报表及异常月报表的自动化

Feature of EP6

- Smart module covers the function of 2G~5G.
- Can simply select control program without stopping system.
- Achieve real-time cloud monitoring, data collection.
- To specify a number of Hierarchical Mobile SMS alarm notification management by channel.
- SMS notification when power been cut off.
- Can be set up to send SMS before the phone rings, reset SMS notification, continuously sending multiple abnormal alarm function.
- When no network, dial-up directly to check system operation data.
- Network collect latest 100 abnormal records for future reference.
- Connecting the central integrated management software, which can achieve the automation of the abnormal statistical reports and abnormal monthly reports of the various channels.



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