



川源(中国)机械有限公司
GSD(China) Co., Ltd.



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

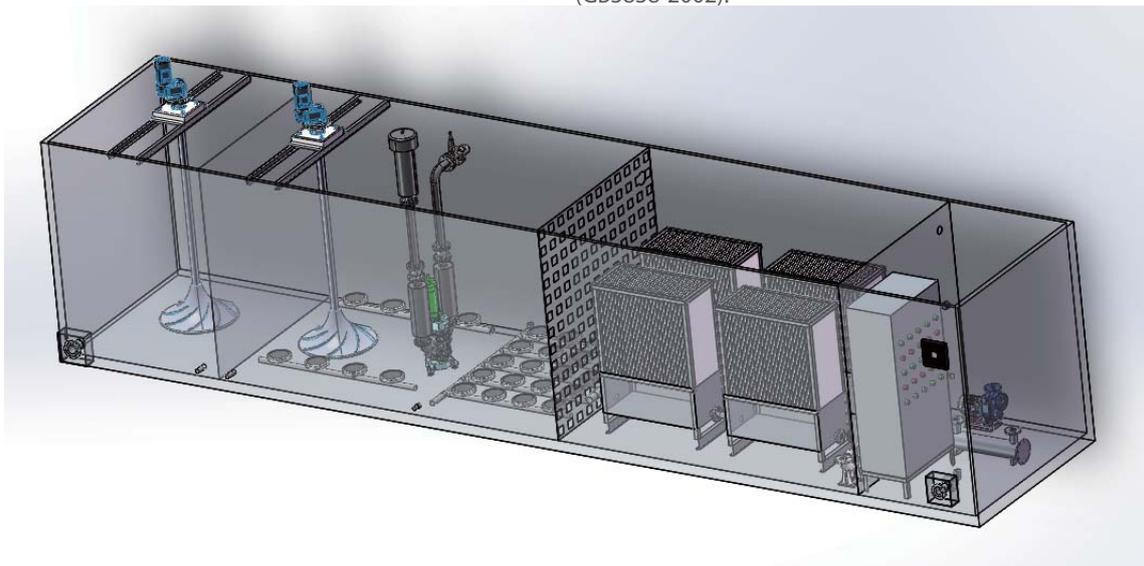
集装箱式一体化污水处理设备采用标准集装箱货柜，运输快捷方便，单套设备处理能力50~200m³/d。针对城市、农村生活污水，一般工业废水以及黑臭河道特性而研发，主要采用AO+MBBR和AO+MBR污水处理工艺，处理效率高，出水水质稳定，处理后污水水质可达到《城镇污水处理厂污染物排放标准》

(GB18918-2002)一级A/B排放标准或《地表水环境质量标准》(GB3838-2002) IV类标准。

General Introduction

The compact unit reactor adopts the standard container as its main body, which is convenient for transportation. The treatment capacity of one unit is 50-200m³/day. We specially developed this system according to the characteristics of urban and rural domestic wastewater, the general industrial waste water and black smelly river course. The wastewater treatment technology AO + MBBR and AO + MBR are adopted to achieve high treatment efficiency and stable effluent quality.

The effluent quality can meet "Class I A / B standard Discharge Standard of Pollutants for Municipal Wastewater Treatment Plant (GB18918-2002) or Class IV Standard of Environmental Quality Standards for Surface Water (GB3838-2002).



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

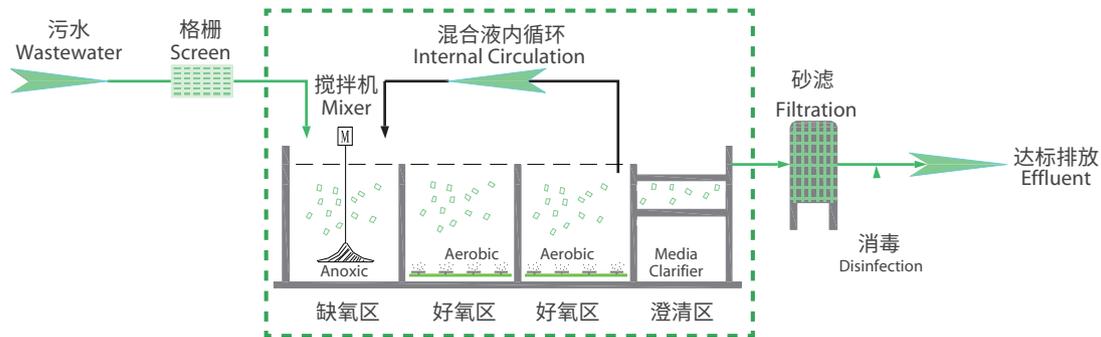
- Compact units with small size
- Increased treatment capacity
- Complete solids removal
- Improved settling characteristics
- Operation at higher suspended biomass
- Concentrations resulting in long sludge retention times
- Enhanced process stability
- Low head loss, low noise
- No filter channeling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



处理工艺 Technical process

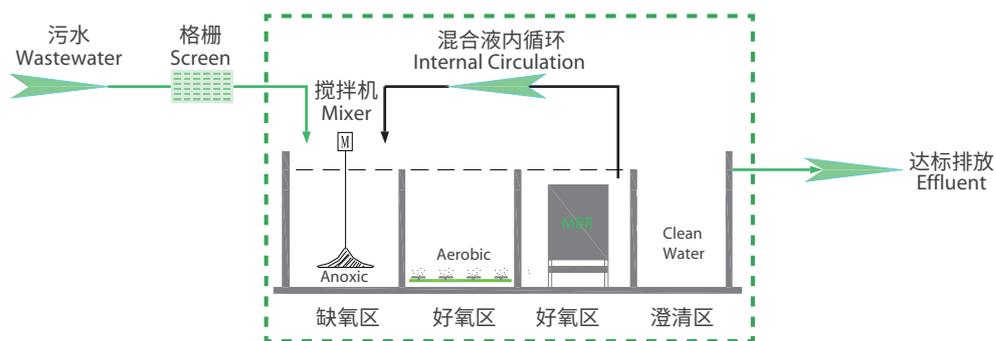
AO+ MBBR 工艺：MBBR 工艺兼具传统流化床和生物接触氧化法两者的优点，是一种新型高效的污水处理方法。

AO+MBBR process: The MBBR process is a new and efficient wastewater treatment method, which combines the advantages of both traditional fluidized bed and biological contact oxidation processes.



AO+ MBR 工艺：MBR 工艺是一种由活性污泥法与膜分离技术相结合的新型水处理技术。

AO+MBR process: MBR process is a new water treatment technology, which combines activated sludge method and membrane separation technology.



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.



MBR工艺原理

MBR process principle

MBR 是膜生物反应器 (Membrane Bio-Reactor) 的简称, 是现代膜分离技术与传统生物处理技术有机结合而产生的一种全新的高效污水处理工艺。MBR 工艺通过将分离工程中的膜分离技术与传统废水生物处理技术有机结合, 不仅省去了二沉池的建设, 而且大大提高了固液分离效率, 而且由于曝气池中活性污泥质量浓度的增大和污泥中特效菌 (特别是优势菌群) 的出现, 提高了生化反应速率。同时, 通过降低 F/M 比减少剩余污泥产生量 (甚至为零), 从而基本解决了传统活性污泥法存在的许多突出问题。

MBR is the abbreviation of Membrane Bio-Reactor, which is a new efficient waste water treatment technology combining modern membrane separation technology and traditional biological treatment technology. The MBR process combines the membrane separation technology in the separation engineering with the traditional wastewater biological treatment technology, which not only saves the construction of the secondary sedimentation tank, but also greatly improves the solid-liquid separation efficiency.

Moreover, the increase of the mass concentration of activated sludge in the aeration tank and the emergence of specific bacteria (especially the dominant bacteria) in the sludge, could improve the biochemical reaction rate could be improved as well. Meanwhile, by reducing the F/M ratio, the excess activated sludge amount could be reduced (even to zero), and consequently, some outstanding problems existing in the traditional activated sludge process will be solved.

MBR工艺特点

MBR process features

- 能够高效地进行固液分离, 分离效果远好于传统的沉淀池, 出水水质良好, 悬浮物和浊度接近于 0, 可直接回用, 实现污水资源化;
- 膜的高效截留作用使微生物完全截留在反应器内, 实现了反应器水力停留时间 (HRT) 和污泥龄 (SRT) 的完全分离, 使运行控制更加灵活;
- 反应器中微生物质量浓度高, 耐冲击负荷;
- 有利于增殖缓慢的硝化细菌的生长、繁殖, 系统硝化效率可以提高。通过改变运行方式具有脱氮除磷的功能。

- It can efficiently separate the solid from the liquid, the effect will be much better than the traditional sedimentation tank. The discharge water quality is great, the suspended solids and turbidity are close to 0, which then it can be reused directly and achieve the purpose of wastewater recycling.

- The high efficient membrane interception enables the microorganism to be completely trapped in the reactor, realizing the complete separation of HRT and SRT, and makes the operation control more flexible.

- The microorganism mass concentration in the reactor is high and resistant to the impact load.

- It is beneficial to the growth and reproduction of slow-multiplying nitrifying bacteria. The nitrification efficiency of the system could be improved. By changing the operation mode, the system could also achieve nitrogen and phosphorus removal.

集装箱一体化污水处理设备

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或AO+MBR AO+MBBR or AO+MBR			
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

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、无市政管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 pipe network 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 填料

MH hyperboloid mixer

MBBR 填料是一种新型生物活性载体，它采用科学配方，根据污水性质不同，在 高分子材料中融合多种有利于微生物快速附着生长的微量元素，经过特殊工艺改 性、构造而成，具有比表面积大、亲水性好、生物活性高、挂膜快、处理效果好、 使用寿命长等优点。

MBBR carrier is a new type bioactive carrier, which adopts scientific formula according to the different wastewater characteristics. It enables various microelements to infuse in the polymer materials which are beneficial to the rapid growth of microorganisms in macromolecules. After modification and construction process, MBBR carrier has advantages such as large specific surface area, good hydrophilicity, high biological activity, fast membrane forming, good treatment effect and long service life.



特点

- 启动快，改造、调试周期短。
- 生物量大，抗冲击负荷能力强。
- 节省能耗，节省占地，节省投资。
- 灵活应用，好氧、缺氧、厌氧段均可。
- 直接投加，无需新增构筑物。
- 特别适合用于污水处理厂提标改造，深度脱氮处理。
- 该技术也用于一体化设备构建，可有效比常规工艺节约1/3-1/2的占地面积，管理也更为简单。

Features

- Fast start-up speed, short renewal and commissioning cycle.
- Large biomass, strong shock-resistance load capacity.
- Energy Saving, small footprint, reducing investment outlay.
- Flexible application, aerobic, anoxic and anaerobic sections are all applicable.
- Direct operation with no need for new civil works.
- Particularly suitable for wastewater treatment plant upgrading and deep denitrification treatment
- This system is also used for the construction of integrated equipment, which can effectively save 1/3 to 1/2 of the floor space and the more simple management compared to the conventional process.

MBR膜生物反应器

MBR membrane bioreactor



特点

- 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185m³/m³。
- 低能耗成本。
- 维护简单。

Features

- 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 m³ / m³.
- Low energy costs.
- Easy maintenance.

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.

SRB 沉水式罗茨鼓风机

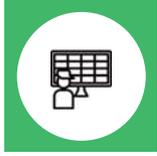
SRB submersible roots blower

特点 Features

- | | |
|--------|---------------------|
| ■ 低噪音 | ■ Low noise |
| ■ 安装简便 | ■ Easy installation |
| ■ 低故障 | ■ Less trouble |
| ■ 电动机 | ■ Motor |
| ■ 过滤装置 | ■ Filtration device |



水务管理物联网解决方案 IoT SOLUTIONS FOR WATER MANAGEMENT



远程监控 Remote monitoring

降低巡检人员成本

- 实时监控设备 & 水质状态
- 短信及网页远程控制设备启停，提高现场应变能力
- 分散各地的一体化及多种设备，皆可使用本系统做集中管理

Trim down the cost of human resource as well the time span

- Collection the data and feedback from on site operating apparatus without on site attendance.
- At any time and at any condition of weathers, duty of monitoring and control are effectively being carried out at instant responsive communication.
- Collective and Centralization of data from various site equipments become feasible, easy and relatively less skilled technician required.
- Unmanned attending means reducing the cost of total effectiveness.



异常预警 Early alarm

减少设备维护成本

- 设备或水质状态异常时，立即电话及短信通知负责人员
- 设备故障前预先报警，减少损失
- 专业技服团队可提供维护咨询服务

Trim down the Cost of Downtime as well maintenance and repair

- Provide early sign of failure by alerting via mobile phone or others wireless network system.
- Early precaution step and action could be instantly being activated.
- Should there is any contingency danger or untoward incident, it could be immediately to response in advance before it comes costly damage and irrevocable dangerous - Early alert facilitate service team to well prepare and act promptly and not wasting unnecessary time and labor.



自动控制 Automatic control

简化设定时间 & 人力

- 简单易懂的操作界面，无需专人编程，自行设定参数即可使用
- 多台设备联动控制、运行周期控制，时段排程，各种逻辑组合控制，只需简单设置便可灵活运用

Simple and easy to operate, required no skilled personnel

- Built with informative interface and step which require direct to browse.
- Multiple layer of interface provide in depth data and information to enhance and explode upgrading as well improving the operating system.
- Built in customer oriented interface for easy to read and alter. All parameter and functions set up requires no specialist.



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