



川源(中国)机械有限公司
GSD (China) Co., Ltd.



智能集装箱式 一体化污水处理设备

Intelligent Compact Unit

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介绍 General Introduction

智能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、AO+MBR污水处理工艺，处理效率高，出水水质稳定。

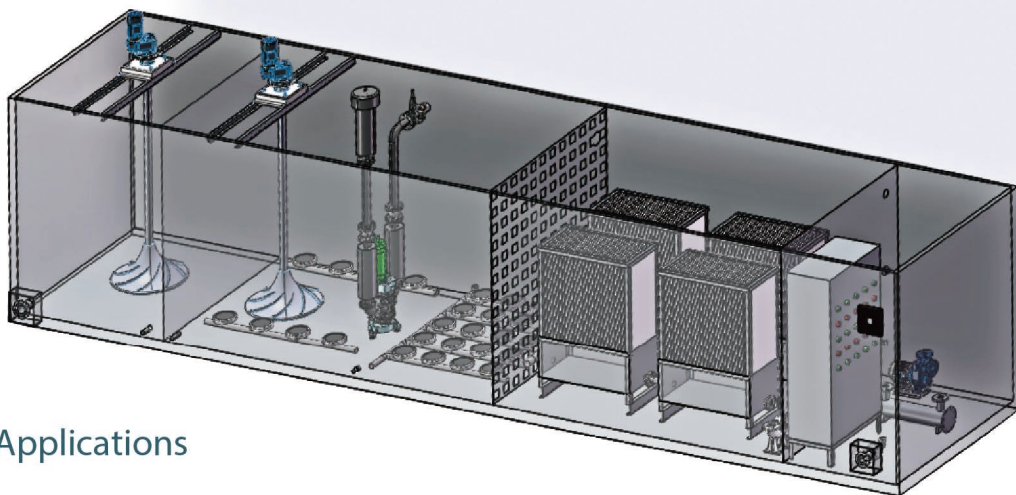
处理后污水水质可达到《城镇污水处理厂污染物排放标准》，(GB18918-2002)一级A/B排放标准或《地表水环境质量标准》(GB3838-2002)准IV类标准。

设备搭配有智能模组与监控系统，实现一体化设备数字化、物联化，可进一步达成无人少人运营、远程监管、风险预警等智慧功能，提升用户的使用体验。

The compact unit 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 quasi-IV Standard of Environmental Quality Standards for Surface Water (GB3838-2002).

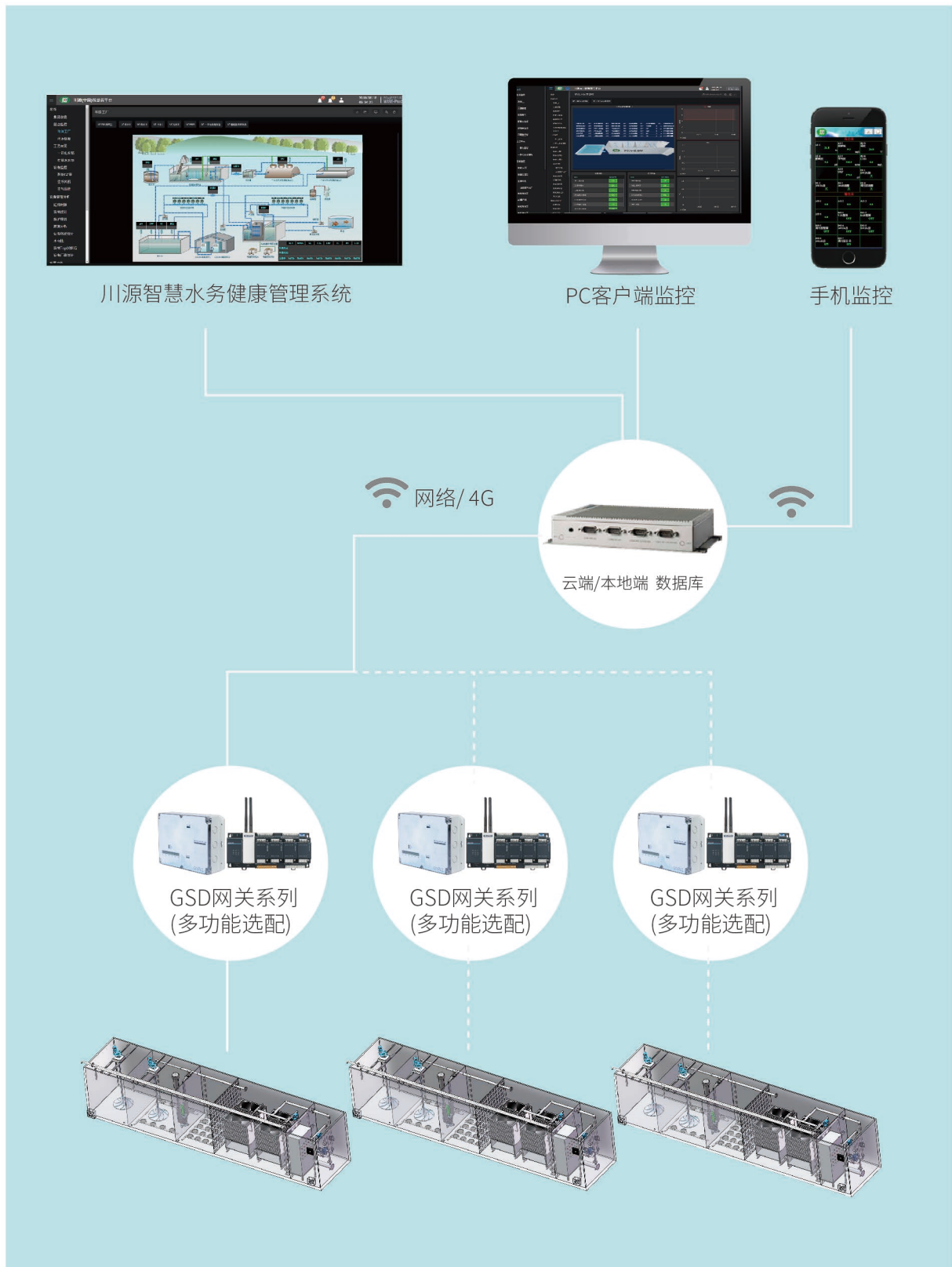
The equipment is equipped with intelligent modules and monitoring systems to realize the digitization and interconnection of compact unit, which can further achieve intelligent functions such as unmanned operation, remote supervision and risk warning, and enhance the user experience.



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。
- 与生活污水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.

智能管理系统架构 Technical process



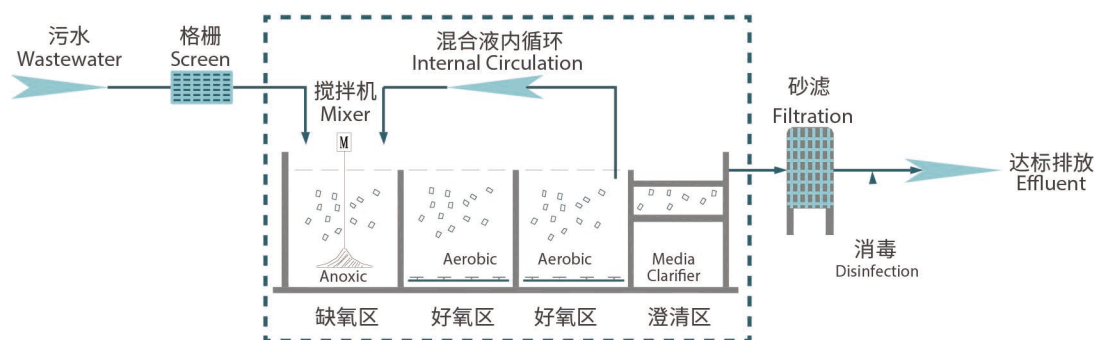
特点 Features

- 实时设备运行监测及水质监测，异常报警，降低损失。
- 支持远程设备控制，提高应急处置能力，降低巡检人力成本。
- 专业决策模块提供维护建议，包含故障预警功能，延长设备使用寿命。
- 智能化管理可搭建川源设备管理系统或利用客户自有平台，选择灵活。
- 针对单套、多套一体化设备提供多种服务方案，可对多套分散设备集中管理。
- 预制型套装设备，集成高品质配套设备厂内组装完成，现场建设周期短。
- 集装箱规格模块设计，运输快捷便利，并利于增容扩建。
- 提供 MBBR、MBR 工艺选择，强化污水处理稳定性，抗冲击能力强。
- 系统污泥停留时间长，产泥量少，减轻污泥处置负担。
- Real-time equipment operation monitoring and water quality monitoring, abnormal alarms, reduce losses.
- Support remote equipment control, improve emergency response capabilities, and reduce labor costs for inspections.
- The professional decision-making module provides maintenance suggestions and includes fault warning functions to extend the service life of the equipment.
- Intelligent management can operate in GSD equipment management system or on the customer's own platform.
- Provides multiple service solutions for single and multiple compact units, and can realize centralized management of multiple scattered compact units.
- The compact unit is refabricated packaged system of high-quality, which is assembled in the factory, and on-site construction period is short.
- The modular design of container specifications makes transportation fast and convenient, and facilitates capacity expansion.
- Provide MBBR and MBR process options, strengthen the stability of sewage treatment, and have strong impact resistance.
- The system has a long retention time of sludge and less sludge production, which reduces the burden of sludge disposal.

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.



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.

优势

MBBR process features

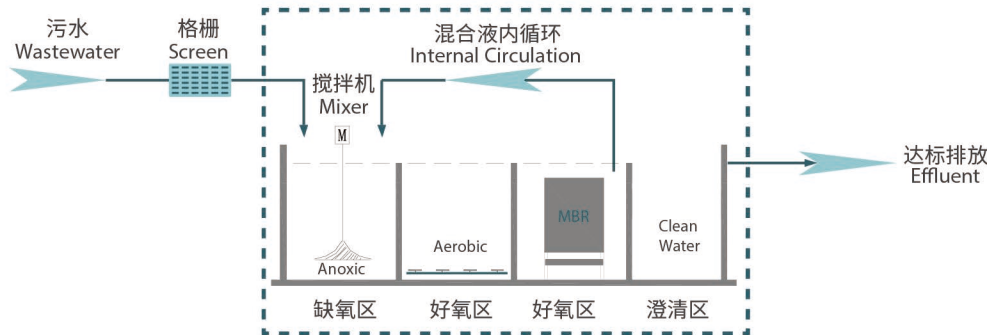
- 处理负荷高，容积负荷是传统的 2~4 倍。
 - 氧化池容积小，降低了基建投资。
 - MBBR 工艺中可不需要污泥回流，不需反冲洗设备，减少了设备投资，操作简便，降低了污水的运行成本。
 - MBBR 工艺污泥产率低，降低了污泥处置费用。
 - MBBR 工艺中不需要填料支架，直接投加，填充率 10%-70%，节省了安装时间和费用。
- The processing load is high, and the volume load is 2 to 4 times that of the conventional one.
 - The oxidation tank has a small 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.



处理工艺 Technical process

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.



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.

优势 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.

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规格型号 Specification type

型号 Type	智能集装箱式一体化污水设备 Intelligent Compact Unit			
	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 dimentions	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

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搅拌推流系列

搅拌机系列 | 推流器系列



供氧曝气系列

曝气机系列 | 曝气盘系列 | 曝气管系列



风机系列

三叶罗茨鼓风机系列 | 增压罗茨鼓风机 | 沉水式风机 | 空气悬浮离心鼓风机



污泥处理设备

带式脱水机 | 厢式压滤机 | 非金属矩形刮泥机 | 浅层高效气浮设备



智能化系列

EP6 物联监控管理系统 | 空气质量管理体系 | RS-485 传感器



反应器及套装设备

芬顿反应系统 | MBR生物膜反应器 | 预制泵站 | 一体化污水处理设备



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