International Journal of Science and Engineering Applications
Volume 12-Issue 04, 101 – 103, 2023, ISSN:- 2319 - 7560
DOI: 10.7753/IJSEA1204.1034

Composite Ecological Wastewater Treatment Technology and Data Feedback System Based on Cloud Computer Background

Xiao Zhang
Hetao College, Bayannur
Inner Mongolia, 015000, China

Abstract:This article briefly introduces the development and application of urban sewage treatment based on data feedback system, and introduces the background of cloud computing and the development history of composite ecological treatment technology for sewage treatment. By constructing a bacteria-algae-floating bed composite system, based on the study of its effect on water purification, its mechanism characteristics were discussed. Construct a bacteria-algae-floating-bed composite system to purify sewage with different concentrations, and explore the distribution characteristics of nitrogen cycle bacteria and the evolution process of phytoplankton community.

Keywords: Composite Ecological Wastewater, Wastewater Treatment, Data Feedback, Cloud Computer

1. INTRODUCTION

Most of the Nanning Railway Bureau's jurisdiction is located in Guangxi. The domestic sewage from the small and medium-sized stations along the Xianggui, Guizhou, Jiaoliu and other lines is basically discharged directly into agricultural irrigation ditches or streams without treatment, so as to dissolve in the receiving water body. The oxygen content drops, and even produces anaerobic degradation reactions, producing sulfide and skatole, which makes the water body smelly, which affects the local ecological environment and is also contrary to the national environmental protection policy. The composition of antibiotic production wastewater is complex, with high organic content, strong biological toxicity inhibition, and high content of refractory substances. Because antibiotic wastewater contains high-quality concentration of SO42-, it will have a strong primary inhibition of MPB (methanogenic bacteria). And secondary inhibition, which affects the normal operation of the anaerobic digestion system. Therefore, the existing antibiotic wastewater treatment projects are still based on aerobic biological treatment processes, but there are still problems such as high treatment costs and unstable treatment effects. To meet the emission standards, the aerobic process needs to be strengthened [1-6].

Compound green ecological system sewage treatment technology has been developed rapidly all over the world because of its ecological harmony and good landscape effect. At present, this technology is widely used in lake water body restoration and agricultural non-point source sewage treatment projects in China. The system has many advantages such as low carbon and energy saving, low operating cost, simple management and maintenance, stable and reliable operation, etc., regardless of its application prospects or Economic and social benefits are both the first choice for sewage treatment and are worthy of promotion and application. A large pharmaceutical factory in Northeast China is a key backbone enterprise in China's pharmaceutical industry and a key production base for antibiotic raw materials. In the production process of drugs, a large amount of antibiotic production wastewater, auxiliary workshop production wastewater, and domestic sewage are discharged. The main components are fermentation residues, mycelium, organic solvents and various suspended solids and inorganic salts. To this end, the plant has built a large-scale antibiotic wastewater treatment project on the basis of a large number of experimental studies, and has successively built continuous flow and intermittent Two kinds of aerobic biological treatment projects, after comparative operation, the composite aerobic biological treatment technology shows the characteristics of high treatment efficiency and good water output effect. However, the infrastructure and operating costs of this method are expensive, among which the investment in sludge anaerobic digestion High, and the sludge digestion and treatment technology is more complicated. The sludge treatment cost accounts for about one of the total operating costs of the sewage treatment plant, and the investment accounts for the total investment of the sewage treatment plant [7-14].

With the commissioning of a large number of sewage treatment plants, the output of sludge will also increase substantially. Moreover, the current level of sludge treatment and disposal technology is not high. Among the only dozen sludge digestion tanks in our country, few can operate normally, and some are not operating at all. The direct discharge of sludge causes secondary pollution. Due to the lack of funds, the low technical level of operation and management personnel, etc., the conventional activated sludge treatment plants in many small and medium-sized cities cannot maintain normal operation. The low level of sludge treatment and utilization technology has become one of the biggest obstacles to the development of urban sewage technology in my country. Ecological water treatment technology is one of the effective ways to solve the above problems. Ecological water treatment technology has no chemical energy input and chemical consumption in the water purification process (Suetal., 2014), low operation and maintenance requirements, and reduced sewage treatment costs. It is important for the water environment in my country's cities and rural areas. The reduction and elimination of pollution is of great significance. Compared with aerobic biological treatment methods, anaerobic biological treatment technology has the advantages of high load, low energy

consumption, low capital construction and treatment costs. Generally, when treating the same sewage, the anaerobic method has a significant advantage compared with the aerobic biological treatment method. According to reports, in temperate regions, the cost of aerobic treatment of activated sludge or trickling filter for sewage treatment is one euro per equivalent resident per year [15-21].

2. THE PROPOSED METHODOLOGY

2.1 The Cloud Computer Background

Cloud computing and big data are hailed as the future "diamond mine and new oil", which is determined by its own characteristics and potential value. The emergence of cloud computing and big data technology has once again brought an all-round change to the IT industry with a higher technical level and a wider impact. Cloud computing uses distributed processing technology to provide computing resources, storage resources, and various generalized resources to users of resources in the form of services through the network, changing the mode of direct and exclusive use of physical resources in the traditional IT architecture.

As the core value carrier of this IT revolution, big data is mainly used for distributed storage and analysis of massive data with multiple data types to obtain valuable information and guide industries, industries, enterprises, governments, education and other departments Make predictive decisions about future development. Driven by the dual forces, the cloud computing and big data industries have developed rapidly. A well-known IDC research institute conducted a survey on the demand for cloud computing big data-related talents in the Asia-Pacific region, and found that the gap is huge, with an annual demand growth of more than 30%. Of course, the effective drive of this industry chain is inseparable from the construction of a talent team. As a higher vocational college with strong hands-on ability and clear career positioning, it should build a reasonable and scientific cloud computing and big data curriculum system to avoid blindly following the trend in professional settings. , The order of courses is random, the learning content is out of order, and the position is not clear. The advent of the era of cloud computing big data has put forward new requirements and challenges for the training of IT talents. Recently, through searching the data of well-known domestic and foreign recruitment websites and many cloud computing and big data industry portals, many companies departments are posting a large number of jobs related to cloud computing and big data talents, which shows that there is a huge demand for job.

2.2 The Composite Ecological Wastewater Treatment Technology

At present, the applied ecological pollution control technologies mainly include: biological treatment technology with microorganisms as the processing core, ecological pond treatment technology with an animal-plant ecosystem, and wetland treatment technology with plants and microorganisms as the main processing function. A large amount of waste water is discharged during the production of antibiotics. Although in recent years, factories have implemented cleaner production and purified water recycling, which has greatly reduced the discharge of production waste water and pollutants, but in general, the concentration of pollutants in the waste water There is a tendency to increase.

The plant was divided into above-ground and underground parts. The fresh and dry weight were weighed and ground to analyze the nutrient element content in the plant. The nitrogen and phosphorus in the plant Measure after digestion with concentrated sulfuric acid + hydrogen peroxide. Three replicates were performed for each plant sample to check for errors. In view of the fact that it is difficult to achieve the goal of a single form of green ecological pond technology for domestic sewage treatment in railway stations, the best technical solution for research should be to design a compound green ecological system with combined functions of oxidation ponds, biological ponds, and constructed wetland beds. On the basis of making full use of the advantages of various ecological technologies, we should achieve a reasonable design structure, select and cultivate wetland plant varieties with strong pollution resistance and purification capabilities, and make a reasonable combination to form a virtuous cycle of ecosystems, and give full play to all kinds of biological, the purification functions of plants and plant root microbes at various levels can achieve good treatment effects.

2.3 The Data Feedback System for Composite Ecological Wastewater Treatment

The treatment effect of the composite continuous flow aerobic treatment reactor on the comprehensive antibiotic wastewater. As can be seen from Figures 3 and 4, the treatment efficiency of COD and BOD5 has been maintained at about 95%, and the COD mass concentration of the effluent reaches 200mg/L. The effluent BOD mass concentration has been lower than 50mg/L for a long time, which indicates that this kind of reactor has a good removal effect on refractory substances. During the summer test, the three plants can grow normally, with new leaves growing, leaves enlarged, and plants the plant's root system grows obviously, and white new roots grow out.

Compared with the conventional aerobic treatment reactor, the composite aerobic treatment The basic environment for the survival of microorganisms in the reactor has changed from the original gas and liquid phases to gas, liquid and solid three phases. This transformation creates a richer existence form for microorganisms and forms a more complex complex ecosystem. A complex ecosystem composed of bacteria, fungi, algae, protozoa, metazoa and other trophic levels.

3. CONCLUSIONS

Tests have proved that it is correct to set up a composite green ecological sewage treatment process in theDepot. The biochemical pond serves the purpose of pretreatment. The biological oxidation pond, constructed wetland module, and biological landscape pond in the composite green ecological sewage treatment system the combination is suitable for sewage purification treatment of small and medium-sized stations and points in tested area.

4. REFERENCES

[1]Chen Xudong, Wang Shuai. Application of composite ecosystem in urban sewage treatment technology[J]. Petroleum and Petrochemical Materials Procurement, 2019(35):1.

[2] Zhu Sha. Talking about big data processing technology under the background of cloud computing[J]. Electronic Testing, 2020(22): 2.

[3] Che Jiazhu, Bao Zhengde, Tang Yawen. "Big Data Campus" based on cloud computing technology[J]. Computer System Network and Telecommunications, 2019, 001(002): P.24-27.

[4] Ye Qing, Liu Changhua. Research on "Big Data and Cloud Computing Technology" Course Construction under the Background of New Engineering Courses[J]. 2021(2020-11):149-151.

[5] Ye Qing, Liu Changhua. Research on "Big Data and Cloud Computing Technology" Course Construction under the Background of New Engineering Courses[J]. Journal of Hubei University of Economics (Humanities and Social Sciences Edition), 2020, v.17; No.197(11):151-153.

[6] Sun Hongfang. Design and implementation of file management system under the background of cloud computing[J]. 2021(2018-1):42-43.

[7] Shi Hongyue, Ren Xuanlei. Data processing system, method and computer storage medium based on cloud platform:, CN108876372A[P]. 2018.

[8] Yang Dong. Discussion on the application of cloud computing technology in computer data processing[J]. Information and Computers: Theory Edition, 2019, 426(08):17-18+21.

[9] Han Lanlan. A composite ecological filter bed based on the decentralized domestic sewage treatment of new rural construction:, CN213112721U[P]. 2021.

[10] Jia Jinlan. Construction of a data information security system based on computer cloud services[J]. Computer Fan, 2018, 01:50-50.

[11] Wang Weiya, Jiang Tao, Wu Ke, etc. A composite ecological decentralized sewage treatment device:, CN212269590U[P]. 2021.

[12] Xu Song. Research on the treatment of rural sewage by enhanced anaerobic-composite media ecological filter bed[D]. Beijing Jianzhu University, 2020.

[13] Wu Yongming, Deng Mi, Tu Wenqing, et al. A method for removing trace heavy metals and trace amounts of F-53B from electroplating wastewater treatment effluent:, CN108675464A[P]. 2018.

[14] Xu Lili, Wang Kunpeng, Li Kuiling, et al. Research progress on the preparation of conductive separation membrane and its application in water treatment[J]. Membrane Science and Technology, 2019.

[15] Cai Jianhua, Hu Wenxin, Zhang Lingli. Design and practice of computer experiment teaching cloud platform based on SPOC[J]. Experimental Technology and Management, 2019, 36(12): 4.

[16] Zhang Xingjia. Exploration and research on the construction of Zhangye ecological industry system based on the complex ecosystem [J]. New Silk Road: Late, 2018(24): 2.

[17] Tian Baojun, Du Xiaojuan, Yang Huyun, et al. Research on hybrid collaborative filtering optimization technology in cloud computing environment[J]. Application Research of Computers, 2018, 35(7): 5.

[18] Kong Haibin. Research on big data processing technology under cloud computing mode [J]. Communication World, 2019, 26(12): 2.

[19] Feng Kai. Design of metallurgical control system based on cloud computing technology and intelligent water drop algorithm[J]. Industrial Heating, 2020, 49(1):3.

[20] Xiao Xiao, Feng Jun, Wei Haiyan, et al. A composite ecological chain sewage treatment system:, CN209428359U[P]. 2019.

[21] Lin Qi, Fan Xinrui, Zou Lirong. Research progress of sulfur-containing wastewater treatment technology[J]. Oil and Gas Field Environmental Protection, 2020, v.30; No.138(05):31-34+43+81.

[22] Wang Quanlong, Li Jian, Deng Guozhi. Experimental Research on Advanced Treatment of Urban Wastewater by Composite Ecological Floating Bed[J]. Water Treatment Technology, 2019, v.45; No.326(03):122-125+130.

[23] Wang Wei, Bai Jieqiong, Wei Dongyang, et al. Research progress on the synergistic enhancement of sewage treatment with sponge iron composite system[J]. Environmental Protection and Circular Economy, 2019, 39(6): 5.

[24] Lu Yixin, Zhao Li, Jiang Lu, et al. A composite ecological filter bed for decentralized domestic sewage treatment in rural areas:, CN207347250U[P]. 2018.

[25] Ma Yucheng. Analysis of sewage treatment technology and methods in environmental protection projects [J]. Architectural Engineering Technology and Design, 2018, 000(017): 4839.

Li Haiying. A composite ecological chain sewage treatment system:, CN212222523U[P]. 2020.