Eliminating Odors from Wastewater and Managing Sewage Treatment Plant Odors

Within any urban infrastructure, one of the crucial elements is the wastewater treatment plant. However, it emits unpleasant smells and odors which can be a nuisance to the public. Therefore, it is necessary to treat these odorous gases before they are released into the atmosphere.

The area responsible for producing unpleasant smells at a **wastewater treatment facility** is comprised of the wastewater collection system and the sludge treatment area. The collection system consists of sewage channels, screening, grit removal, and a collection sump. The sludge treatment area includes a storage tank, a digester system, and equipment rooms for sludge dewatering. Most of the odors produced during the

treatment process are a result of the anaerobic breakdown of organic matter. The main gases responsible for causing odors and requiring treatment at the facility are Hydrogen sulphide, Ammonia, Mercaptans, and VOCs. The release of these gases into the atmosphere without proper treatment can lead to air pollution and potential health hazards. Therefore, implementing an effective odor control unit at the **wastewater treatment facility** is crucial in efficiently solving the issue without compromising the health and well-being of individuals.

Choose the Appropriate Odor Control System

The most effective method for managing unpleasant smells is to install an appropriate **odour control unit for the wastewater treatment plant**. This unit will remove odorous gases from designated areas or tanks and release odor-free air into the environment. The market offers a variety of proven technologies for odour control, such as activated carbon adsorption, chemical scrubbers, and biological oxidation systems. Selecting the right odour control technology is crucial for efficiently eliminating odours and keeping operating costs low at the plant.

Adsorption System using Activated Carbon

The system based on activated carbon operates by utilizing the process of adsorption, where the odorous gas molecules are trapped on the surface of the media and then oxidized, releasing odorless gases into the atmosphere. When it comes to removing odors from wastewater, the appropriate filtration media is selected to effectively remove Hydrogen sulphide, Ammonia, VOCs, and Mercaptans. It is important to choose activated carbon media that can efficiently treat these odorous gases. There are various options available such as chemically impregnated activated carbon media and specially treated virgin activated carbon media that are specifically designed for sewage odor removal. Clients often prefer water regenerable activated carbon media for wastewater odor applications as it has a longer lifespan, can be cleaned in place without the need for chemicals, and is environmentally friendly as it can be disposed of on land. A well-designed adsorption-based system can consistently achieve a high odor removal efficiency of 99.9% or more.

Oxidation through Chemical Processes

Chemical oxidation is a common method used to suppress odors by using water scrubbing with appropriate oxidizing or neutralizing chemicals. To address wastewater odors, a combination of Sodium hypochlorite and Sodium hydroxide is typically

employed for oxidation and neutralization. This solution is suitable for intermittent odor removal in larger plants. However, managing and stocking the chemicals can be a hassle, requiring constant operator attention. Additionally, precautions must be taken to prevent any damage to the downstream treatment process by ensuring proper drainage from the scrubbing unit. This method is known to achieve an odor removal efficiency of 99%.

The process of Biological Oxidation.

Municipal and industrial **waste treatment facilities** are opting for biological methods due to their cost-effectiveness in the long term. These biological oxidation methods are classified into three processes: Biofilter, Bio-Trickling filter, and Bio-scrubber. Although the main process for removing odors is the biological oxidation of foul gases with the aid of microorganisms, there are slight variations in the use of these filters and the types of microorganisms that thrive in them.

One category of odor control technology is the biofilter, which uses natural materials such as stones, wood chips, and peat to provide a surface for microorganisms to grow. These units are large and require constant humidification of the odorous gases. They have an odor removal efficiency of 95-99%, but the bio media must be replaced every 2 years, adding to the cost of operation. However, this technology is now considered outdated in modern treatment plants due to its large size and high capital and operating costs. It has been replaced by the more efficient Bio-trickling filter (BTF) or Bio-scrubber, which use vertical packed towers for microorganism growth and have a longer bio media life of 10-15 years. Proven bio media for BTF or Bio-scrubber are made from recycled materials such as glass, plastic, or PU foam. In the BTF, air enters from the bottom and passes through the packed tower, oxidizing the odorous gases upon contact. The tower is continuously misted with nutrient-rich water from top to bottom. In Bio-scrubbers, this misted water is recirculated, with only a minimum amount of drainage and top-up water needed. The contact time of the packed bed with odorous gases can be adjusted to vary the odor removal efficiency, which can reach up to 99.9%. Before selecting the most suitable option for your needs, it is important to research all the established bio-scrubber manufacturers in the Indian market.

To prevent the problem of unpleasant smells and ensure a reliable removal of odours, city sewage treatment plants are implementing a two-stage approach consisting of a biological treatment process followed by activated carbon adsorption. This approach allows for a constant odour removal efficiency of 99.9%, even during disruptions in the biological unit, as required by the design.

AQOZA is a company that focuses on advanced technology and is dedicated to producing products that eliminate unpleasant smells. They specialize in creating systems that remove odours, as well as manufacturing bio-scrubbing and activated carbon adsorption products for a variety of applications. To learn more about their range of odour control solutions and filtration media, **please visit their website - https://aqoza.com/** .