
ODOR SCRUBBER MONITORING

INTRODUCTION

With increased concern for clean air, many wastewater treatment plants are adding scrubber systems at their facilities to help control odor emissions from Hydrogen Sulfide (H₂S). Hydrogen sulfide is a colorless, poisonous, flammable gas, known for its foul odor of rotten eggs, often the result of the bacterial breakdown of organic matter in the absence of oxygen, as found in swamps and sewers.

Scrubber system designs

There are three basic designs for scrubber systems: wet scrubbers, dry scrubbers and biological scrubbers. All claim to remove 99.9% of the H₂S in the air being processed. There are several worthy manufacturers of Odor Scrubber Systems used in the wastewater industry, however, to insure that the scrubber package installed at your facility meets these requirements, you must monitor the exhaust outlet of the system at all times.

Wet Scrubbers

Wet Scrubbers describe a variety of devices that remove H₂S from a digester or from other gas streams. In a wet scrubber, the polluted gas stream is brought into contact with the scrubbing liquid by spraying it with the liquid, forcing it through a pool of liquid, or by some other contact method, so as to remove the H₂S. Chemicals are added to the scrubbing liquid to increase the absorption of H₂S.

Dry Scrubbers

Dry Scrubbers are often used for the removal of odorous and corrosive gases from wastewater treatment plant operations. The media used is typically an activated alumina compound, impregnated with materials to handle specific gases such as H₂S. Activated alumina compound is used as a desiccant; to keep things dry by absorbing water from the air, and as a filter of fluoride, arsenic and selenium in drinking water. Media used can be mixed together to offer a wide range of removal for other odorous compounds such as methyl mercaptans, aldehydes, volatile organic compounds, dimethyl sulfide and dimethyl disulfide.

Biological Scrubbers

Biological Scrubbers or bioscrubbers, also known as trickling filters or biotrickling filters, use a modified form of packed tower technology. A special packing is used that encourages and allows the growth of a highly active biological medium on the packing surface. The packing and biological mediums are irrigated with water. The pollutants in the gas stream are absorbed into the water and are aerobically degraded by the biological medium.

MAINTENANCE AND MONITORING

To insure maximum efficiency from any of the aforementioned types of scrubbers requires regular maintenance and monitoring. Besides the obvious benefits of knowing that the scrubber is operating at top efficiency, there can be considerable cost savings associated with any chemicals and dry media used. Knowing the exact H₂S output of your system, at all times, can ensure that you are in compliance with local and state regulations.

Good Neighbor Policy

The Good neighbor policy is beneficial to all plants located in close proximity to new or existing housing plans. It is important to 'Be a Good Neighbor' by monitoring the output of all scrubbers, to assure that everyone benefits from this investment. Learning from your neighbors that your scrubber system is not operating correctly can cause several months of bad press and may affect the retail value of the homes and property near your facility.

Gas Detection Monitoring Systems

Gas Detection Monitoring systems have been around for several years. Knowing when and how to apply this technology requires a solid working knowledge of the application and the properties of the sensor technology being used. In most cases, due to extremely high relative humidity, mounting a sensor directly into the fiberglass piping not only decreases the life of the sensor, but also drastically increases the cost of maintenance. The insides of the scrubber system pipes tend to get coated with biological waste that can plug or damage any direct mounted sensor.

Sample Draw System: That is why the use of a sample draw type system is a strong option. It allows us to precondition the sample, presenting a relatively clean and dryer sample to the sensor, thus increasing the operating life of the sensor. Additionally, the monitor can be mounted in a more convenient location with the sample draw system, providing easy viewing and routine calibration. These self contained sample draw type systems are easier to install and only require a small bulkhead fitting into the scrubber piping stack.

CONCLUSION

Scrubber systems at Wastewater Treatment Plants serve the purpose of controlling odor emissions, but not everyone has the same needs when an Odor Scrubbing System is considered. Individual problems require special solutions, which often includes greater versatility and unique equipment configurations. MSA professionals remain committed to assisting you in clarifying your needs and to guiding you on what system would be best suited to fulfill them.

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