

The study on simplified deodorization equipment for removing low concentration odor

Whole term

2003.7 ~ 2005.3

(Purpose)

In recent years, the area around the WWTPs is becoming a housing area. In these areas, the odor sources, which occurs from the sewage facilities, has a bad influence on the life environment and therefore to do a measure for this purpose is required. The concentration of these odor sources is low compared with the concentration inside WWTP, and also the frequency which they occur are unstable. We defined these conditions as “the low concentration and unstable odor”, these differ from the characteristic which the conventional technologies deal with the target odor sources. Moreover, to secure wide space to install equipment in the urban area is in the difficult situation, and the electric power to supply equipment with, too, cannot be secured. Also, to use the deodorizing technology which was used for the WWTPs to deodorize isn't appropriate from the cost performance and the maintenance manage-ability and so on.

The simplified deodorization equipment (SDE) is the efficient deodorizing equipment which used activated carbon and moreover has economic advantage because there is not a power unit.

The purpose of the study is to confirm a performance of the deodorizing of SDE in the actual sites. Also, it is to reflect this result and to decide a design procedure for equipment.

In this study, we confirmed that for the removal of “the low concentration and unstable odor”, the SDE has many advantage than the conventional technology about the cost performance and the operation control.

(Target odor)

Target inlet odor and components concentration were decided as showing bellow Table 1 based on analysis results of actual odor gave off from storm-water facilities and technical manual published by Japan Sewage Works Agency in 1998. Outlet components concentration was based on Offensive Odor Control Law, but odor concentration was set up considering the performance of this equipment.

Table 1 Design figure

Unit	Odor concentration (-)	Components				
		Hydrogen sulfide (ppm)	Methyl mercaptan (ppm)	Methyl sulfide (ppm)	Methyl disulfide (ppm)	Ammonia (ppm)
Inlet	1,000	0.6	0.07	0.04	0.005	0.4
Outlet	300	<0.02	<0.002	<0.01	<0.009	<1

(Design gas flow rate)

Basically, treatment gas flow rate is decided by measuring amount of the wind in facilities. But in case it is difficult to set up gas flow because of new facilities, it calculates from the pump capacity that flows into the storm-water tank.

(Maintenance)

This equipment has non-powerdrive because the concept of this equipment is natural gas flow. Therefore it needs no daily maintenance and it is enough to carry out visual inspection at regular intervals.

The frequency of changing deodorizer is once a year basically. The deodorizers are in cartridge that can be handled by person and are no need to use special device for changing cartridge.

(Conclusion)

It was confirmed by test results carried out in actual sites that these equipments has superiority for removing “the low-concentration and unstabele odor” gave off from storm-water facilities such as storm-water pumping station and storm-water tank etc. We compiled the technical manual including the performance of the device, the design technique, notes concerning construction and maintenance for management.

Collaborators : Japan Institute of Wastewater Engineering Technology ,
Ataka Construction & Engineering Co., Ltd., Ebara Corp.,Kubota Corp.,
Kurita Water Industries, Ltd., Sumitomo Heavy Industries, Ltd.,
Takuma Co., Ltd., Tsukishima Kikai Co., Ltd.
Nishihara Environment Technology Co.,Ltd., NGK Insulators, Ltd.,
Hitachi Plant Engineering &Construction Co., Ltd.,
Mitsui Engineering & Shipbuilding Co., Ltd., Mitsubishi Kakoki Kaisha, Ltd.
Members of JIWET : Ryuichi Takahashi, Takashi Kirihara, Masato Koeda, Kiyoshi Yamamoto

key words

Odor measurement , Low concentration odor , Unstable , Deodorization equipment