Research on evaluation of the performances of the mobile sludge dewatering-dryer		
Whole term	2000. 4~ 2003.3	

(Purpose)

In Kamitakara Village, Gifu Prefecture, there are seven treatment plants for each drainage area, and the generated sludge is consigned for treatment. However, in order to ensure the availability of a disposal land and to confront the problem such as rise of the cost of disposal, an integrated sludge treatment plan together with adjacent 6 villages was chosen. The purpose was to utilize the generated sludge that is treated integrally at an integrated sludge treatment center as construction materials and incinerated ash, which are in the final stable state. In this background, saving the cost for transportation of sludge to the integrated sludge treatment center and an appropriate sludge treatment system for Kamitakara Village are required in order to utilize sludge effectively.

On the other hand, there are four treatment plants at Nadasyou Village in Fukui Prefecture and the generated sludge is cosigned for treatment after condensing. Sludge has to be utilized effectively in restoring grasslands and farmlands because of the difficulty in ensuing the acquisition of sludge disposal areas and the rise of the disposal cost. However, the construction of a sludge treatment facility for each of four treatment plants is not effective because quantities of generated sludge of all these treatment plants are different. Therefore, a system that makes it possible to treat sludge effectively is required.

This technology, an independent system that is a combination of the rotary thin film dryer with the centrifugal dehydrator, is loaded on a car, and makes it possible to circulate sludge. An outer electric power source is not required because the boiler is loaded as a heat source and it treats the dried discharged gas by pyrolisys. The major characteristics of this technology are the method of thin film desiccation and dried sludge of 50 % being able to be derived within a short time which compacts the facility. Simultaneously, the fact that the operational time is very short, makes it suitable to be loaded on a car to function as a mobile treatment plant.

The purpose of this research was to evaluate the performance of the facility and the maintenance in each treatment zone.

(Results)

1) The targeted capacity of the dryer was satisfied with the dried sludge with a water content of 50%.However, it sometimes became 60 % owing to the characteristics of sludge.

2) There was no problem in the quantity of the treated sludge and the heat balance in the continuous operation conducted on one whole day. In addition, the water content of the dried sludge was within a range of ±10% of the target.

3) Energy effectiveness (amount of working and consumption of kerosene for evaporation of water) was 74~76 % (the target was over 70%) and the kerosene consumption of the boiler which is the heat source was 6.9 ~ 7.6 L/h.

4) Composition of the discharged gas was satisfied with the standard. Also, the returning load from the drainage was satisfied with that of the design plan of the water treatment facility.

5) The operational characteristics were such that 1 hour for preparation and starting, and 30minutes for stop and adjustment; and it was appropriate for circulating treatment because the inspection was easy.

6) When this equipment was induced into the incinerating system in Kamitakara Village and the restoring system for green and farm lands in Nadasyou village as a final disposal method, the total maintenance cost for the whole 2005 including depreciation was 80 % of that of the mobile sludge dewatering car.

(Future task)

A written document on the evaluation of the performance will be produced using the knowledge obtained from this study and it is recommended to utilize this system.

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Keywords	Type of being loaded on a car, Centrifugal thin film dryer,Small scale circulating treatment