

Study on Centralized Management System Evaluation Model

Whole term

1992.10 ~ 1994.3

(Purpose)

The number of small and medium sized cities with small population which try to set about sewage works has been increasing rapidly in recent years. Accordingly, the number of small scale sewerage systems which is going to start operation will increase in the future.

In order to operate the present sewerage systems efficiently, such cities require more effective and economical maintenance systems, which are suitable for the local situations and different from those of big cities.

This study started in 1992 to examine the present status of the maintenance of small scale sewerage systems with oxidation ditch process, for the purpose of proposing an area-wide maintenance method and a necessary system to implement it.

(Results)

The followings are the contents of the survey conducted in 1993, based on the results of a previous survey held in 1992:

1. Establishment of the wastewater treatment plant model

The treatment scales were categorized into five classes. For each class of the current treatment plant and the improved automated treatment plant, flow charts and specifications of the facilities (including equipments), water quality test items and maintenance work management were defined.

The current treatment plant and the improved automated treatment plant were defined as follows:

The single stand-alone treatment plants: the treatment plants currently in operation

The improved automated treatment plants: the treatment plants with unmanned operation and remote-controlled monitoring

However, a patrol maintenance is necessary about once a month.

2. Estimation and comparison of working hours for maintenance

If automation of the equipments, monitoring and operation are completed for the current treatment plants, labor saving rate would be estimated at 75- 79% for each of the classes.

3. Establishment of the centralized management evaluation model

As a result of consideration of labor saving effects through the centralized management of the current treatment plants, operation management of sludge treatment turned out to be an effective option for labor saving.

Because patrol management by the moving dewatering car will contribute to labor saving and power saving, and installation of fixed dewatering machines will not be necessary.

If the improved automated treatment plants are centralized, labor saving could be expected by operation management of water and sludge treatment, water quality tests and making of daily and monthly reports.

4. Selection of the evaluation models through case studies

In the case study of Kunisaki region in Oita prefecture, it was estimated that 10%, 15% and 37% of labor saving would be achieved when the current treatment plants are reformed to improved automated treatment plants, current area-wide maintenance treatment plants and to improved automated area-wide maintenance treatment plants, respectively.

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Keywords

oxidation ditch process, automatization, labor saving, evaluation model, maintenance