

## Cooperative research on monitoring system of manhole pump operation

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### ( Purpose )

The operation monitoring system that information is individually informed to manager only in case of the trouble had been spread until now. In recent year, such system that information from multiple informing equipments is managed by together has been introduced for management of the manhole pump facilities. In this system, not only is the monitoring of the manhole pump carried out by the central monitor, but the collection of daily driver record and monitoring of the operation condition, etc. are possible, and they contribute to the efficiency improvement of maintenance of manhole pump. However, it is difficult for the comparison of data in controlled area where operation monitoring system of multiple manufacturers intermingles, since monitoring items such as daily driver record are different from manufacturers. And, the case that it can not be watched by the central monitor occurs, since the conventional agreements (following, communication protocol) for normally carrying out communication by the report equipments and central monitor through the public telephone line are different from manufacturers.

This study did that stimulate the improvement in the compatibility between manufacturers by proposing function of report equipment and the center monitoring equipment, monitoring item and standard type of communication protocol, and opening this content to public and attempted the more efficient maintenance with the purpose.

### ( Result )

#### 1. Optimum operational monitoring system.

Based on the information which the manufacturer got from the manager and questionnaire for the municipality conducted by this organization, the following items assuming the standpoint of manager such as the reduction in convenience and maintenance cost, etc. were arranged with the purpose of the standardization, and the necessary function for the equipment of central monitor and reports were examined.

. carry out discovery of trouble and quick restoration      make the communication none error  
reduce introduction cost      reduce maintenance cost      deals with the upgrading of management.

#### 2. Necessary monitoring item of manhole pump facilities

In order to satisfy the function of inform equipment and central monitor in the optimum operation monitoring system, the necessary monitoring items for manhole pump facilities was extracted. By dividing the items necessary for this monitoring into the divisions of control, operating state, trouble, they were arranged. And, each item was carried out for rank division by the importance in standard and option.

#### 3. Examination of communication protocol

The communication protocol (communication agreement) was made in order to normally transmit monitoring items necessary for manhole pump facilities.

#### 4. Effects

By this study, the effects such as following are expected.

1) The quick correspondence to restoration becomes possible, since the control of abnormality or troubles, etc. can be executed by lumping together even in the controlled area where operation monitoring system of multiple manufacturers intermingles.

2) In emergency, when simultaneously transmit to central monitor by telephone, fax or pocket bell, there are no transmitting errors such as hear-missing, thus it is possible to report the exact trouble in time.

3) Since the report equipment of different manufacturers can be connected with 1 central monitor, by adopting the standard type of communication protocol, the reduction of introducing cost is attempted.

4) Since the picking of the various data becomes possible without going to manhole pumping plant, the maintenance costs such as the period patrol can be reduced.

5) The data for the uncertain water management can be monitored, so the construction of the advanced management system becomes possible.

#### 5. Summary

Based on the cooperative research by this organization with manufacturer of 8 companies, that the standard types such as necessary functions of report equipment and central monitor, monitoring items, communication protocol were constructed were made as the result of this research. And, we want to advance popularization of the result of this study by opening the pamphlet and communication protocol on the standardization of monitoring system.

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