

Research on Appropriate Methods of Upgrading Electrical Equipment of Wastewater Treatment Systems

Year of Research

2008 • 2009

(Purpose)

In Japan, the period when many wastewater treatment systems will be upgraded is approaching. Among treatment plants at approximately 2,000 locations, approximately 800 have been in operation for 15 years (service life of principal equipment). Thus, new upgrading plans must be enacted considering project effectiveness. And we must also appropriately consider the public's recently diversified demands which now include long service life, seismic resistance, energy conservation, and advanced treatment (Fig. 1). But because it is difficult to clarify the state of deterioration of electrical equipment, even guidelines and other handbooks do not contain detailed specific concepts of systematic upgrading.

This study inventories challenges faced to plan the upgrading of electrical equipment and to present specific methods of systematically and rationally upgrading electrical equipment and summarizes the findings as a technical document.

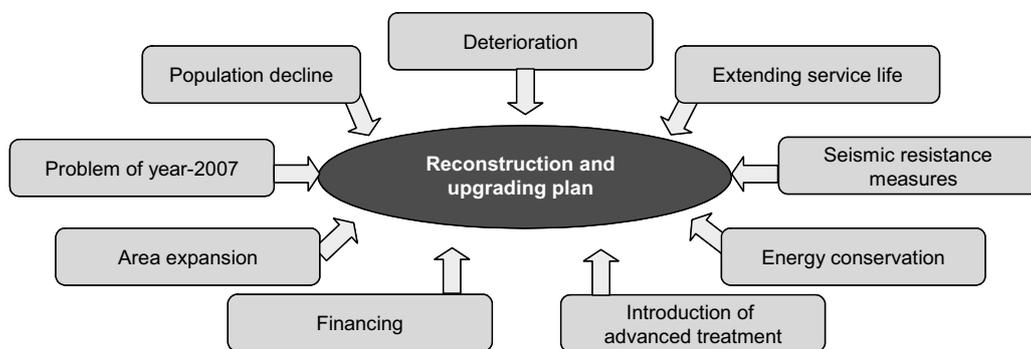


Figure 1. Problems Studied to Plan Upgrading

(Results)

Figure 2 shows the study flow chart.

(1) Clarifying present state of equipment upgrading

A questionnaire survey of local governments which were, or soon would be upgrading electrical equipment was carried out to clarify present state of equipment maintenance methods, past examples of upgrading, and current upgrading plans.

(2) Studying items which must be considered to upgrade equipment

Based on the results of analysis of the questionnaires, items which must be considered to upgrade electrical equipment were abstracted.

(3) Surveying technologies to support appropriate equipment upgrading

Among technologies which are beneficial both when planning the upgrading of equipment and when actually performing such upgrading, those presumed to be currently applicable were surveyed, categorized, and inventoried. Table 1 shows examples of the surveyed technologies.

(Future schedule)

(1) Proposing upgrading methods

Based on the results of past studies, essential conditions which must be considered to upgrade electrical equipment will be proposed. And a planning enactment procedure will be presented while considering the maintenance of the functions of the overall system. And a case study using an actual wastewater treatment system as its model will be presented.

(2) Preparing the technical document

The results of research in 2008 and 2009 will be summarized as a technical document.

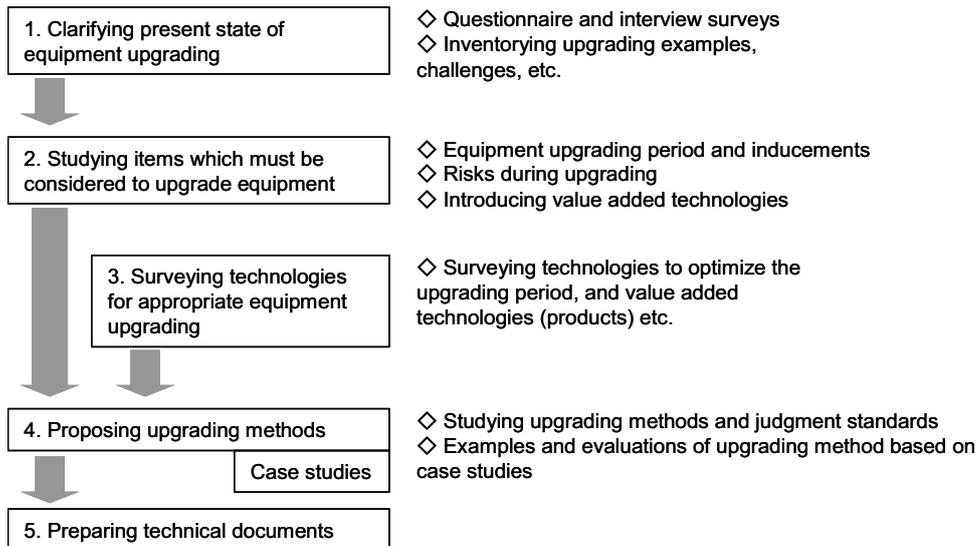


Figure 2. Study Flow Chart

Table 1. Examples of Technologies Which Support Appropriate Upgrading

Survey items	Surveyed technologies
Technologies to optimize the upgrading period	◇ Equipment diagnosis technologies, maintenance methods, etc.
Value added technologies and products	◇ Environmentally conscious products (high efficiency transformers etc.) ◇ Remote monitoring technologies (remote monitoring system etc.)

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Key words

Electrical equipment, upgrading method, functional enhancement