

Joint Research on the Activated Sludge Model(ASM)

Year of Research

2008 • 2009

(Purpose)

Simulation technologies which employ an Activated Sludge Model (below, “ASM”) are, in the midst of rising demand for more advanced treatment and lower costs at wastewater treatment plants, expected to be applied as practical tools to support the selection of wastewater treatment facility treatment methods, the design of facility expansion work etc. and operation control including varying operation conditions. The Activated Sludge Model is in fact, difficult to use from the perspectives of both those proposing maintenance methods and those judging maintenance methods, because of the lack of utilization guidelines for maintenance. This research is summarized in a technical manual to be used for control in cases where a wastewater system manager has been contracted to control plant operation and by wastewater treatment managers.

(Results)

Figure 1 is an overall flow chart of the research study. The following steps were carried out in FY2008.

(1) Outline of the ASM

With reference to existing documents etc., outlines of ASM and of a simulator equipped with ASM were prepared.

(2) ASM use questionnaire survey

To clarify demand for ASM use, questionnaire surveys were carried out at a total of 347 treatment plants under three types of conditions: ① advanced wastewater treatment is performed, ② it is necessary to introduce advanced wastewater treatment, and the ③ existing facility capacity is influent of 5,000 m³/day or more. The questionnaire survey recovery rate was 73%, and 61 treatment plants have actually used ASM.

Figure 2 presents the way that ASM was actually used at the 61 treatment plants. Of the wastewater treatment plants which have used ASM, 87% of wastewater treatment plants used it to study under optimum operation conditions, followed by the study of response to abnormal conditions such as rainfall etc., a design study during reconstruction and renewal, and a study of electric power consumption reduction.

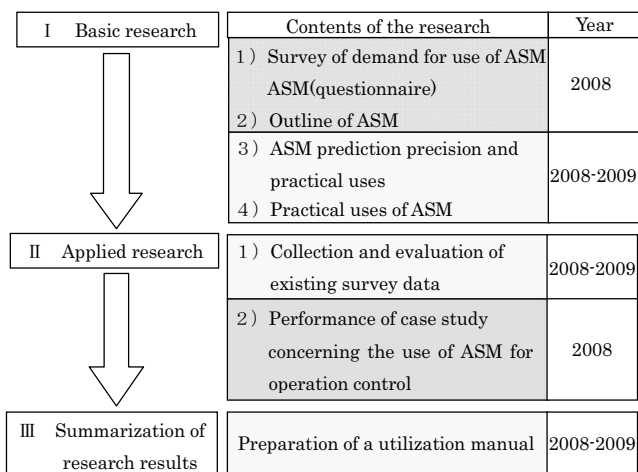


Figure 1 Overall Flow

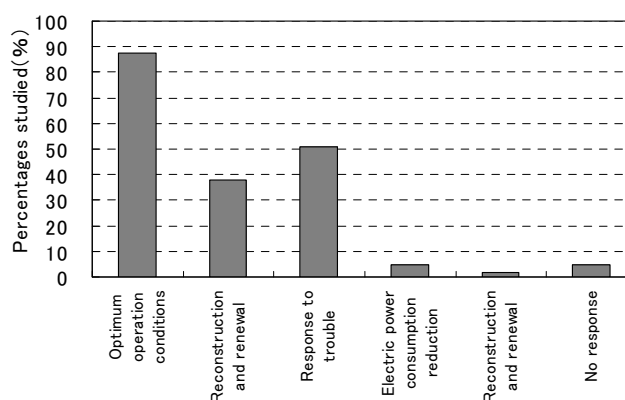


Figure 2 Uses of ASM (Responding Treatment Plants: 61 plants)

(Future plans)

The following research will be carried out in the future.

- (1) Case studies
- (2) Inventory of predicted precision and practical uses of ASM
- (3) Inventory of ASM practical utilization methods
- (4) Preparation of utilization manual

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Key words

Activated sludge model (ASM), operation control