

Research on Membrane Technology Guideline in Sewage Works

Year of
research

2009~2010

Establishment of sound water
environment

(Purpose)

The percentage of sewerage population of our country reached 72.7% by the end of fiscal year 2008 due to constant progress has been attempted, though the percentage still remains low among the small cities. However, a lot of problems such as improvement of closed water bodies, establishment of sound water environment and systematic renovation of deteriorated sewerage facilities have been left. For the solution of those problems, membrane filtration technology is expected to be the major treatment technology. In addition to the application of this technology to treated waste water for recycling, the decreased price of membrane by recent progress of its technology makes direct application of the technology to treatment of sewerage treatment realistically. Furthermore, it is thought that future introduction progresses by development of energy saving on membrane washing technique. In Japan, 17 membrane bioreactor (MBR) plants including the first large-scale one had been introduced to sewerage treatment plants by the end of fiscal year 2010. Increasing needs of renovation might drive installation of membrane filtration facilities into middle or large scale treatment plants.

In this investigation, the new technical information about membrane filtration technologies and the latest knowledge about application of MBR to sewerage treatment were collected. Furthermore, this investigation aimed at revising the 1st edition of the guideline in fiscal year 2008 and reflected revising on the 2nd edition.

(Results)

(1) Collection of new information about membrane filtration technologies

The application examples and the trend of development were investigated about membrane filtration technologies including overseas or other application fields. Moreover, the information on standardization of MBR in foreign countries was arranged.

(2) Examination of the subject towards introduction

The institution outline, the operational situation and the present condition of MBR, domestic small-scale institution and the experiment institution of a country (A-JUMP: the reconstruction case of previous institution, satellite institution), was collected by a check and hearing investigation, and arranged.

Moreover, based on the examination result in JS and NEDO, it was collected as knowledge about sewer introduction of MBR.

(3) Revision of the guideline to the 2nd edition

According to the result of the questionnaire about the 1st edition of the guideline, 75% of municipal corporations think that a guideline is useful, and 60% or more have answered that it is necessary to examine the application of the membrane technologies in sewage treatment. And the major requests to the guideline were the information about “economical efficiency”, “calculation method of construction / maintenance management cost”, and “comparison with a processing system besides”.

The “Sewage Technical Meeting of Membrane Technology” which consists of the pundits and the specialists was installed, and the deliberations towards revision of a guideline were performed based on the above-mentioned result. The draft of the guideline revision with it being fundamental in a municipal corporation for inquiring was arranged in fiscal year 2009. In the fiscal year 2010, the information of “cost”, “maintenance management” and “plan design”, etc. which many users in the municipal corporation request, was collected, and the 2nd edition of the guideline was adjusted useful.

Table 1:
The main revision item in the 2nd edition of guideline for filter processing licensing-in to sewage

The main revision item in the 2nd edition	
Enhancement of content	
	<ul style="list-style-type: none"> ·Points of concern in operation management ·Example of examining the cost, in the cases of newly constructing the facilities (each facilities scale) remodeling the facilities constructing the satellite facilities ·MBR introduction situation and trends concerning standardization in foreign countries etc.
New publishing	
	<ul style="list-style-type: none"> ·Evaluation result of treat water quality in MBR procedure evaluation and examination subcommittee meeting ·Finding from Japanese version next generation MBR technology development project (A-JUMP : Advance of Japan Ultimate Membranebioreactor technology Project) ·Explanation of various filter washing methods ·Facilities scale comparison between MBR and OD method etc.

Collaborator : Sewerage and Wastewater management Department, City and Regional Department Bureau,
Ministry of Land, Infrastructure, Transport and Tourism.

Contact : 1st Res. Dep.; Hiroaki Morita, Hideki Matsuba, Akinori Maeda, Hideaki Komine
【03-5228-6597】

Key words

Membrane filtration technologies, Membrane bioreactors, Water reuse