

## Joint research on the plastic sludge scraper

Whole term

1997. 6 ~ 1999. 3

### (Purpose)

The sludge scraper in wastewater treatment works tend to get corroded and caught by mechanical abrasion resulting short durability as a result of strict corrosive environment of wastewater. Also the repair or inspection needed to cease the operation and to drain the water, are very cumbersome.

The existing scraper are made of metal to satisfy the strength standardized, which makes the weight of the apparatus too heavy, and also its complex design makes the exchange of components consume lot of time and money. Therefore, maintenance-free sludge scraper is recommended.

The plastic main components including chain, sprocket, flight and shoe have been developed, which are not corrosive, with a considerable reduction of mechanical abrasion by self-lubrication of the balance. As a result, the plastic sludge scraper recently developed has improved the durability, has eliminated the maintenance fee for oil supply as well as reduced the total cost due to being lighter weight and efficient in energy.

This joint research was performed for 2 year from 1997 to 1998, aiming at distributing and using this plastic sludge scraper and to summarize its objective and usage as well as to publish a manual.

### (Results)

#### 1. Investigation on the existing situation

##### (1) Number of treatment plants

It was in 1989 that the plastic sludge-removing apparatus was first introduced to a few treatment plants. However, the number has rapidly been increasing since 1995.

##### (2) Background of the use of plastic sludge scraper

In accordance with the questionnaire to municipal entities, the reasons were as follows:

- ① Superior durability against corrosion and abrasion to metallic equipment and light weight
- ② Improved longevity, less frequency in replacing components due to wearing off and no need of oil supply
- ③ Less total cost due to the reduced maintenance cost

##### (3) Abrasion

In comparison with the annual maximum abrasion and permissible abrasion for given components, the average longevity of plastic sludge-removing apparatus is higher than that of a metallic one.

##### (4) Comparison of the number of apparatuses that can be installed, with that of the existing sludge scraper.

The results were as follows:

- ① In the case that the length of the removing apparatus is short, the number is similar to the existing one.
- ② The longer the removing apparatus is, the less the number is. This comparison was not performed in this research. However, it was assumed that the plastic sludge-removing apparatus would require the same number because of the same type of construction with a concrete pavement at the bottom.

##### (5) About [environmental concern]

Recycling of worn off components would have to be examined to utilize the plastic sludge scraper.

#### 2. Preparation of the technical manual

The necessary contents from the planning and design to operation and maintenance for

introducing and using the plastic sludge-removing apparatus were summarized according to the results.

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Keywords

Plastic, Sludge scraper, Saving weight, Corrosion-resistant, Friction-resistant,  
Investigation on the actual use