

**1. Technology**

1.5 Others

**2. Project Name**

1.5.2 Development of an Efficient Sewage Treatment System at the Time of Rainfall in Separate or Combined Sewage Plants Using Existing Facilities.

**3. Keyword**

Sewage treatment, Membrane module, UV

**4. Objectives**

In this research, in order to cope with deterioration of treated water quality at the time of increased load, which is a challenge of the 3W method, we install a large pore size membrane module in the reaction tank at the last stage and install UV equipment at the latter stage. This way, we aim to achieve higher treated water quality. Furthermore, at separate sewage plants, we process inflow amount and water quality data at the time of rainfall using Deep Learning and use them to control the system.

**5. Contents**

In FY 2017, we compared the prediction results of the outflow analysis model which is an effective method to predict inflow water volume at the time of rainfall with the prediction results using Deep Learning. The results show that even if no accurate data on the inflow water volume are available like the analysis results using the outflow analysis model, it is effective to use Deep Learning as a prediction method of inflow water volume if 1 hour interval data such as maintenance daily report is used. However, since the sewage volume flowing into treatment plants increases immediately after rainfall, rainfall information is a prerequisite for future prediction. We found that this can be solved by using AMeDAS precipitation forecast data.

**6. Reference**

This was a joint venture among Kyoto University, the University of Kitakyushu, FUSO Corporation, and Suiko Engineering, Co. with Water Reuse Promotion Center serving at the representative, commissioned by the Ministry of Land, Infrastructure, Transport and Tourism.