

## **Developing an energy-saving wastewater treatment solution has been succeeded in a demonstration experiment.**

A successful demonstration experiment utilizing a high-load dual DO control OD process at the Noichi municipal wastewater treatment plant in Konan City

The demonstration experiment for developing an energy-saving, easy-to-maintain advanced municipal wastewater treatment solution has been succeeded at the Noichi municipal wastewater treatment center in Konan City, Kochi Prefecture. In this industry-government-academia joint research project, Japan Sewage Works Agency (JS) worked with Kochi University, Konan City, Kochi Prefectural Government, and Maezawa Industries, Inc.

In the currently tight fiscal situation, sewerage facilities are required to achieve further efficiency improvement and cost reduction. The Oxidation Ditch process (OD process) is a major wastewater treatment solution employed by about half of the 2,000 municipal wastewater treatment plants across Japan. Notably, this process is employed primarily at small-scale facilities. In Kochi Prefecture, this solution is employed at eight out of 20 municipal wastewater treatment plants.

The high-load dual DO control OD process developed by Professor Taku Fujiwara (Kochi University) et al. is intended to further increase efficiency of the OD process, achieving both improvement in treated wastewater quality and cost reduction. A three-year joint research project (FY2008–FY2010) was implemented by the five entities listed above at the Noichi municipal wastewater treatment center in Konan City to advance practical use of this new solution. The results exceeded the initial targets. JS will continue the joint research with Kochi University and Maezawa Industries, Inc., and review the possibilities of applying this solution across Japan.

JS will stay committed to developing new solutions and putting them into practical use.

<Features of the new solution :>

Optimized to meet the regional characteristics: The treatment time has been significantly reduced (compared with the conventional OD process) in Kochi Prefecture, which is characterized by a warm climate.

Automatic control using sensors: Automatic control helps to ensure high quality of treated wastewater and reduces electrical power consumption.

<Overview of the new solution :>

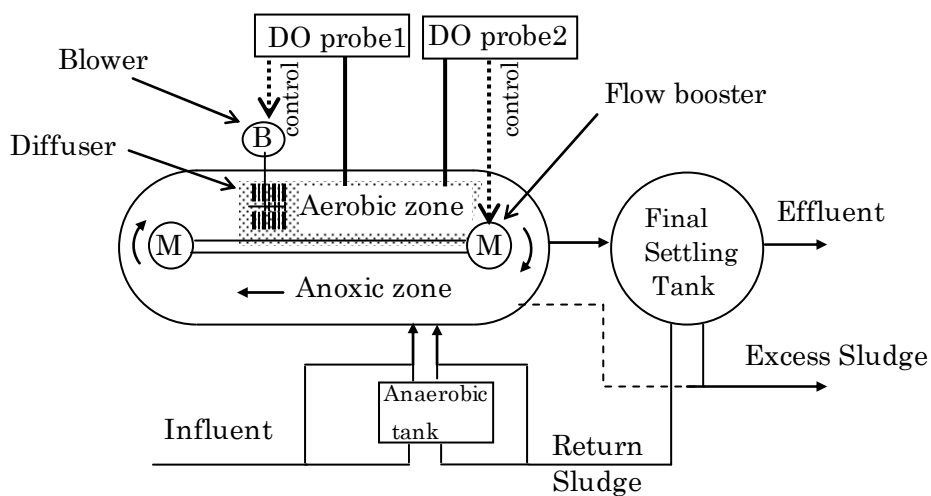
Increasing efficiency of existing municipal wastewater treatment plants, thereby achieving reduction in both pollutants released into the public water body and construction/operating costs.

Main results

- 1) It was demonstrated that stable advanced treatment can be achieved with the hydraulic retention time (based on the maximum daily flow rate in fine weather) of about 12 hours, which is shorter than that of a conventional OD process, under the inflow load conditions at the Noichi municipal wastewater treatment plant.
- 2) The electric power consumption was reduced by approximately 67% compared with the past records at the Noichi municipal wastewater treatment plant.
- 3) Ultra advanced treatment of nitrogen was achieved (the mean total nitrogen concentration of the treated wastewater at 1.3 mg/L).
- 4) It was demonstrated that biological phosphorus removal can be achieved (the mean total phosphorus concentration of the treated wastewater at 0.6 mg/L).

Related materials

1) Features of the dual DO control



Flow diagram of the high-rate dual DO control oxidation ditch technology