

Promoting development of products and solutions for medium- to long-term growth

The METAWATER Group is working on solutions for a new generation, integrating our Group's strengths in mechanical and electrical technologies, joint research, open innovation with partners, etc., with the goal of more advanced technological development that will help sustain infrastructure and improve operational efficiency.

Electrical technology Water environment controller "ZLS"

Achieving the high level of availability and environmental resistance required for water environments

We have developed "ZLS", a controller for water environments that supports the optimization of operation, maintenance, and engineering of ever-more advanced and ever-more complicated water and sewage facilities. "ZLS" has improved specifications from previous models, including an increased CPU processing speed, reduced instruction execution time, and increased program capacity. It also has application compatibility and allows for smooth inheritance of program libraries when updating the water environment control system.



ZLS

AI / ICT Cutting-edge technology initiatives

Utilizing cutting-edge technology to respond to an era of population decline, contributing to securing the labor force and improving safety and productivity

Providing local contribution solutions from a BCP perspective

In order to support the continuation and early recovery of the water and wastewater business in times of disaster and other emergency situations, we are providing solutions for water supply and sewage infrastructure using drones deployed at domestic bases and local contribution solutions from a BCP perspective, with the aim of developing sustainable water and environmental infrastructure through public-private partnerships.



Water pipe bridge inspection using drones

Image recognition technology using AI

We constructed a system that can detect the equipment and inspection objects necessary for ensuring safety at construction, operation and maintenance sites, enclosing them in a frame.



Prevent entry into cordoned-off areas



Ensure safety during night shifts with a single employee

B-DASH Project*1

*1 Innovative sewage system technology demonstration project sponsored by MLIT

ICT technology

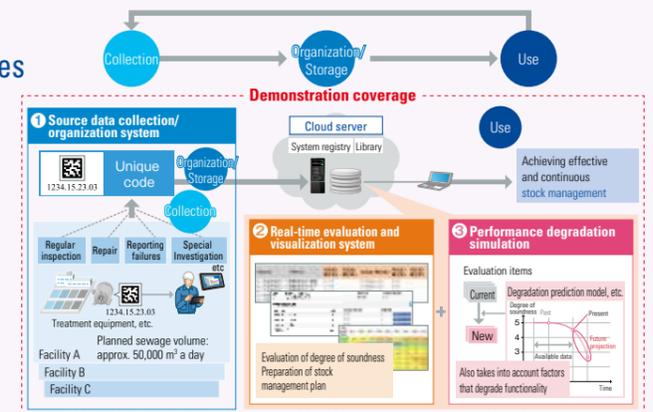
Demonstration research of continued stock management realization system technology in a cloud environment with maintenance data as original sources

(FY2018 B-DASH Project)

Supporting the establishment of effective stock management amid the ever-increasing number of aging facilities

We have demonstrated that continuous stock management can be achieved through an ICT platform and cloud system that makes it possible to effectively collect, organize, store, and use the maintenance data generated in day-to-day operations.

Demonstrators: Joint research group organized by METAWATER Co., Ltd., Ikeda municipal government, Ena municipal government
 Demonstration areas: Sewage Treatment Plant in Ikeda City, Osaka, Water Purification Center in Ena City, Gifu, and five other facilities
 Demonstration years: FY2018 - FY2019



Characteristics of this technology

- 1 Source data collection and organization system**: Efficiently collect and organize (store) operations and maintenance data centrally in the cloud, regardless of location constraints
- 2 Real-time evaluation and visualization system**: Using the collected and organized operations and maintenance data, automatically calculate the degree of soundness and visualize necessary information for stock management
- 3 Performance degradation simulation**: Create models predicting long-term changes in equipment operating performance and introduce a probabilistic distribution for future equipment performance to help determine optimal timing of measures

With the above three component technologies formed in a cloud environment, maintenance data generated through day-to-day operations are used to prepare various plans, thereby achieving effective and continued stock management.

Sewage technology

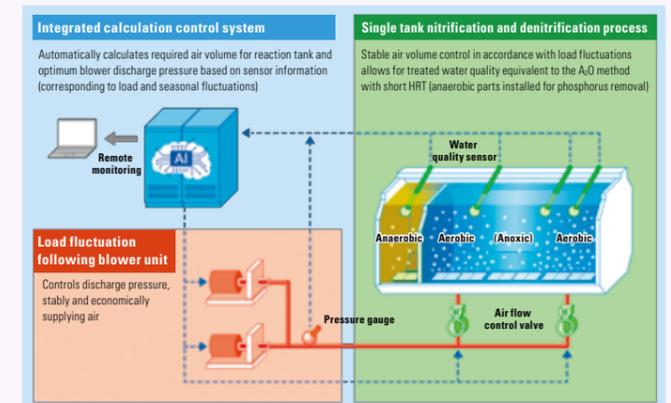
Demonstration research for advanced treatment technology through ICT and AI control of single tank nitrification and denitrification process

(FY2019 B-DASH Project)

Realizing short HRT advanced processing, reduced energy use, and reduced maintenance burden

A treated water quality equivalent to the A:0 method is achieved with short HRT by controlling the air volume corresponding to fluctuations in the reaction tank inflow load. At the same time, by using ICT and AI for integrated management, the optimal discharge pressure for the blower is calculated from the required air volume in real-time, and the discharge power is reduced by controlling the discharge pressure.

Demonstrators: Joint research group organized by METAWATER Co., Ltd., Japan Sewage Works Agency, and Machida City
 Demonstration areas: Naruse Clean Center (Machida City, Tokyo)
 Demonstration years: FY2019 onward



Characteristics of this technology

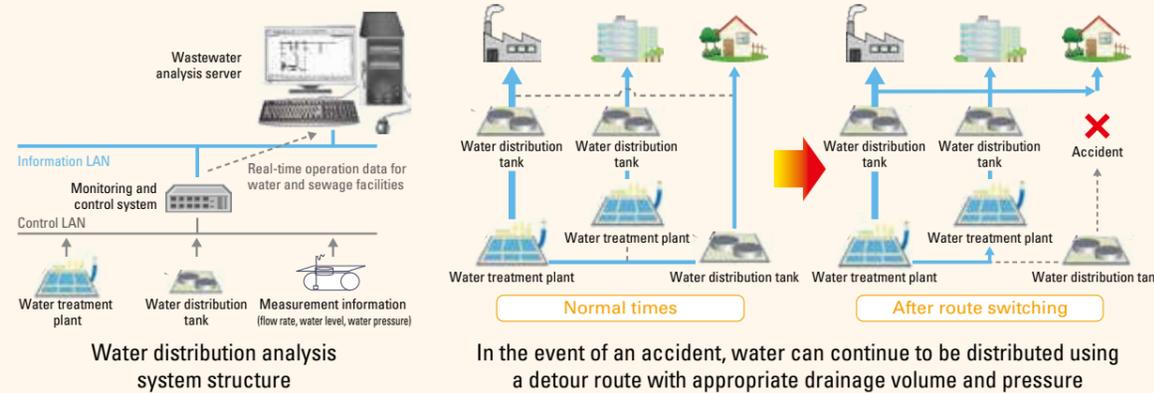
- 1 Realization of short HRT (retention time) through air volume control using ICT**: Formation of optimal aerobic and anoxic zones in accordance with loads using ICT*2
 *2 NOx and NHx meters are used in this technology
- 2 Realization of equipment cooperation through the utilization of ICT and reduced blowing power through pressure optimization**: Calculating the optimal blower discharge pressure from the required air volume in real-time, the discharge pressure is controlled
- 3 Realization of reduced operation adjustment burden by responding to seasonal fluctuations, etc., using AI**: Control parameters for required air volume calculations are automatically tuned using AI (machine learning functions)

Cutting-edge technology

Water supply technology Water distribution analysis system

Supporting rapid decision-making (BCP) for efficient water operation and stable water supply in the event of an accident

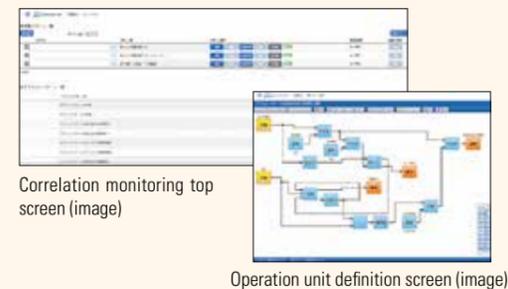
Online water pipe network analysis technology can estimate the status of water transition (flow rate, water level, water pressure, etc.) within the network up to 24 hours in advance, supporting efficient water operation (water distribution plans) and quick decision-making in order to consider countermeasures in case of an accident. Advanced scenario analysis functionality allows for various simulations and contributes to BCP support (consideration of operation methods to shorten water outage time, etc.), technology transfer and know-how accumulation, and systematic inspection and repair planning of pipeline facilities (measures for extending facility life).



ICT technology Correlation monitoring service

Early detection of abnormalities to reduce plant operational risks

As an option of the WBC* wide area monitoring system, signals are captured from field servers (GSA) installed at each site, and when abnormalities during plant operation are detected an alarm is issued at an early stage by making full use of arithmetic operations, comparisons, theoretical operations, etc. The system can be easily operated by drag and drop to freely create formulas, and frequently used formulas are provided by default, enabling the user to easily monitor the plant on a PC, thereby reducing plant operational risks.

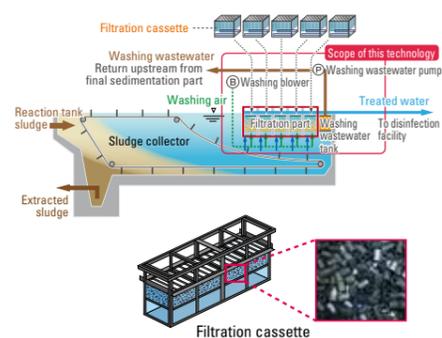


*Abbreviation for "Water Business Cloud" METAWATER's unique information and communications technology for real-time sharing of information and the analysis and utilization of collected information

Topics FY2017 B-DASH Project

Guidelines for "Technology to improve the treatment capacity of final sedimentation tanks"

In a demonstration study conducted at the Ryoshima Purification Center (Matsumoto City, Nagano Prefecture) in cooperation with the Japan Sewage Works Agency and Matsumoto City, a filtration system was installed in the existing final sedimentation tank with the aim of improving the treatment capacity of the system quantitatively or qualitatively without increasing the number of building frames. As a result, it was recognized as a technology capable of achieving stable treated water quality throughout the year and significantly reducing construction costs compared to cases where an additional final sedimentation tank or where new rapid filtration equipment is installed. In December 2019, the National Institute for Land and Infrastructure Management established Technology Introduction Guidelines (draft) for this technology.



Aiming to become a corporate group trusted by citizens

The METAWATER Group aims to be a corporate group that is trusted by citizens, allowing them to entrust us with the water and wastewater business with peace of mind. To this end, the Group is working to improve corporate awareness, promote branding, and proactively disseminate information on the current situation of the water supply and sewerage industry, as well as our ideas, strengths, and achievements. We believe our business itself will lead to the sustainability of the water and wastewater business in Japan, which is one of the world's largest, as well as improve our presence in the water and wastewater business.

Communication activities through participation in local events

The METAWATER Group actively participates in events held at facilities we are in charge of and their surrounding areas all throughout Japan, striving to communicate with citizens.

In addition to holding quizzes and panel displays regarding water at local events, we also host social study tours for local elementary and junior high school students at our water, sewage, and resource environment facilities.

Aiming to communicate the importance of the water and environmental infrastructure that is essential to our daily lives, we are also working with local governments and business entities to create educational facilities, pamphlets, and other in-building communication tools used in awareness-raising activities.



Takizawa Water Treatment Plant (Aizuwakamatsu City, Fukushima Prefecture)
Staff from the Group explain the mechanisms of a water treatment plant through an in-building exhibition

METAWATER Sewerage Science Museum Aichi (Inazawa City, Aichi Prefecture)
Exhibition at a summer festival held at the museum



Takizawa Water Treatment Plant (Aizuwakamatsu City, Fukushima Prefecture)
Explanation being given on METAWATER's Ceramic Membrane Filtration System at a local event held at the water treatment plant

Ofunato City Industrial Festival (Ofunato City, Iwate Prefecture)
Exhibition at a local industry PR event held in the city

Brand activities through in-train commercials, radio programs, etc.

As part of our efforts to increase corporate awareness and understanding, as well as to increase the value of water and environmental infrastructure, the METAWATER Group conducts brand activities through radio programs as well as commercials on the train vision.

Commercials on the train vision, featuring quizzes on water by the Miss Japan "Angel of Water"

We created commercials played on the train vision, by featuring Nanami Nishio, the 2019 Miss Japan "Angel of Water", who presents quiz questions on water. The quizzes were created with themes such as "Protecting water resources" and the "Role of equipment used at water treatment plants", and were designed to give people an opportunity to think about the importance of water.



To commemorate 1,000 episodes of the program "Mizuoto Sketch", a special one-hour program was produced

The TBS Radio program "Mizuoto Sketch", which the Group has been offering since 2015, is a program that introduces the water landscape in various parts of Japan through narration and the sounds of water. In September 2019, a special one-hour program was produced to commemorate 1,000 episodes. We have presented original radio dramas related to the sound of water and selected masterpieces of the water landscape introduced in the past to listeners all across Japan.



Actor Jun Kunimura appeared as a special guest on the special program commemorating 1,000 broadcasts