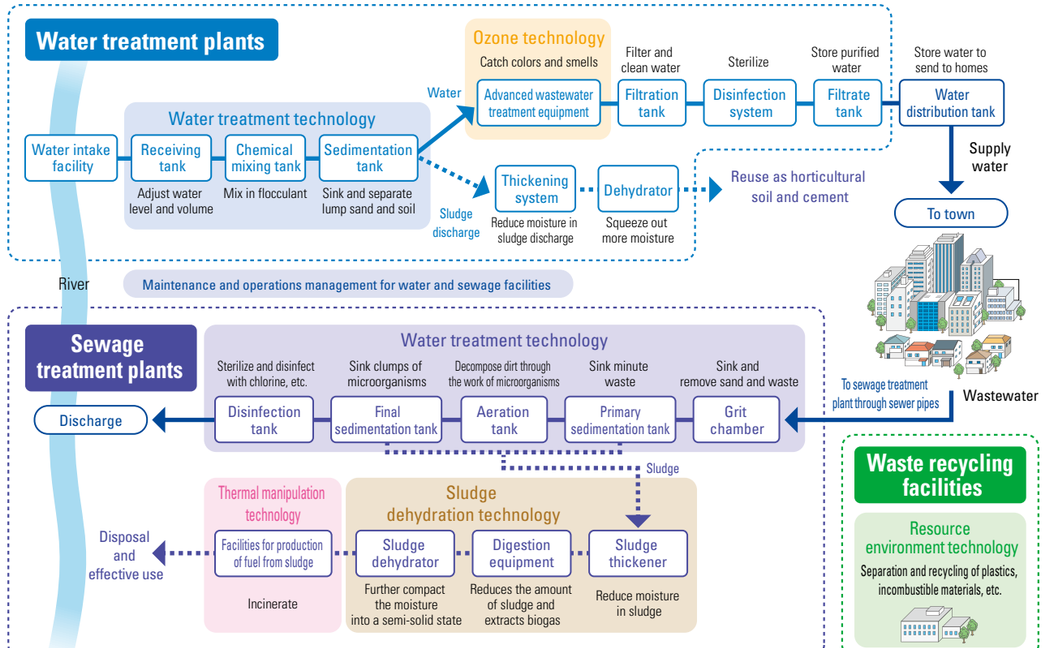
We are positively engaged in technological development that contributes to environmental preservation and reducing environmental burdens, while promoting the active use of natural energy sources and the development and introduction of energy-saving and energy-creation technologies.

Contributing to water and environmental infrastructure through business

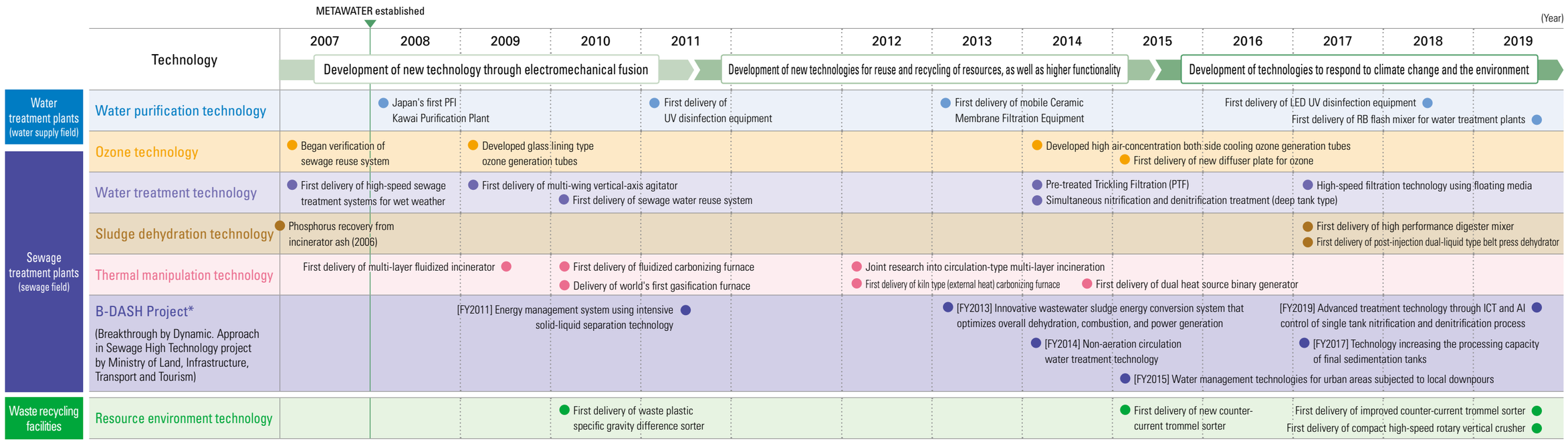
The environment surrounding water changes daily, and challenges vary by country and region. In recent years, environmental destruction caused by plastic waste has also become a major problem.
Beginning from the era of our founding companies NGK Insulators, Ltd. and Fuji Electric Co., Ltd., the METAWATER Group has been engaged in various technological development for over 50 years as a company supporting water and environmental infrastructure.
We were established in 2008, adopting the genes of both those companies. Since then, changes in the natural environment have been intensifying and accelerating, including global warming, climate change, and frequent wind and flood damage.
As a company supporting water and environmental infrastructure, the METAWATER Group will continue to focus on the technological development required by the times.

Development facility

Treatment processes and technology for water and sewage treatment plants



Changes in the development of new technology (2007 to present)



*B-DASH Project Abbreviation of Breakthrough by Dynamic Approach in Sewage High Technology Project. By accelerating research, development and commercialization of new technologies, efficiency of energy use and reduction of life cycle costs in the wastewater business are promoted. It is a demonstration project that has been implemented by MLIT since FY2011 to support overseas development of the water business. Consignees installed a full-scale plant in their sewage treatment plants and demonstrated cost reductions, reductions in greenhouse gas emissions, etc.

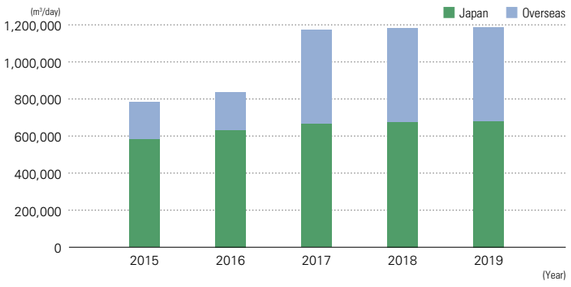
Main environmental technology

Water purification technology Safe water purification system effective even in the face of climate change

Ceramic Membrane Filtration System

Our Ceramic Membrane Filtration System boasts the No. 1 market share in Japan for water treatment plants utilizing membrane filtration systems. The risk of membrane breakage is extremely low, it can be installed in small spaces, and it can also remove protozoa, allowing for safe filtered water.
Thanks to its exceptionally long life, there is a minimal frequency of membrane replacement. In fact, the first unit of this system was delivered over 20 years ago, and it continues to operate to this day without having had the ceramic membrane replaced yet. Additionally, it is expected to be used as ceramic materials after use, leading to a significant reduction in waste.
Finally, only a low amount of pressure is required to filter raw water, and filtration using differences in water level is possible as well, reducing the power needed by pumps, etc., and saving energy.

<Delivery results> Volume of water processed (cumulative)



Ceramic membrane

A mobile water treatment plant that is also active in times of disaster

Mobile Ceramic Membrane Filtration Equipment

This simplified Ceramic Membrane Filtration System, mounted on a truck, is easy to operate and maintain. Since it is mobile, it can be operated even in areas where there are no skilled engineers. In areas that do not yet have water piping laid, the truck can be moved to various water sources, such as lakes, rivers, and wells, allowing that water to be processed and used as safe drinking water.
Water transferred using piping requires a lot of energy, but since this system can move on its own, it contributes to a reduction in transportation energy.
The system can also be used in the event of a disaster such as an earthquake or heavy rain, thanks to the features of the ceramic membrane that enables stable filtration of even high turbidity raw water.

Mobile Ceramic Membrane Filtration Equipment

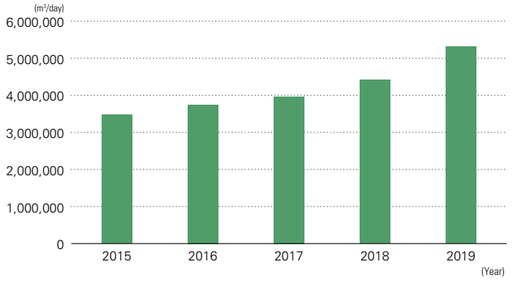
Water treatment technology Water treatment systems that reduce river and sea pollution in wet weather

High speed CSO filtration system

Combined sewer systems discharge simply treated wastewater and untreated sewage into public waters such as rivers when it rains, which adversely affects the quality of water and public health. As such, with the 2004 amendment of the Sewerage Act enforcement order, measures to improve combined overflows are being promoted throughout the country. This includes the start of the "combined sewer system urgent improvement project", which has the aims of (1) reducing pollutant loads, (2) ensuring public health and safety, and (3) reducing refuse.
This system filters simply treated water and untreated sewage at high speeds using our uniquely developed special small filter, which is only about 7.5 mm. By installing it in the primary sedimentation tank of a sewage treatment plant or relay lift station, it can filter out floatable solids and pollutants such as oil balls and plastics at a rate of up to 1,000 m/day.
Additionally, existing primary sedimentation tanks can be remodeled and set. Since it is easy to operate and maintain, it has been adopted as one measure for improving combined overflow in Japan, contributing to environmental conservation measures regarding public water areas.

Special filter medium

<Delivery results> Design treated water volume (cumulative)

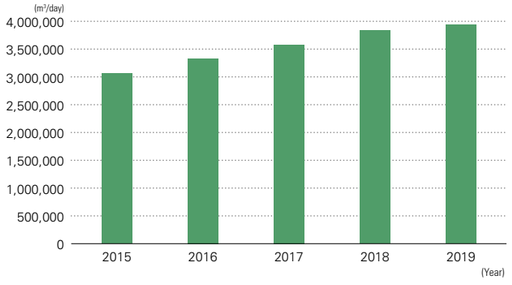


Water treatment technology System with the No. 1 market share, featuring significantly reduced power consumption

High integration configuration air diffusion system

The sewer system collecting and treating domestic wastewater uses 0.7% of Japan's total electricity consumption (equivalent to the annual electricity consumption of 2.11 million households). Approximately 50% of this is electricity used to treat sewage inside wastewater treatment plants. When treating wastewater, microorganisms decompose the pollutants in the sewage, and the microorganisms then sink together with the fine impurities to remove the pollutants. A large amount of air needs to be blown (diffused) into the wastewater in order to activate the microorganisms.
METAWATER has developed a system capable of diffusing ultra-fine air by applying ceramic technology, achieving a high oxygen transfer efficiency. In addition, by reducing the pressure loss when air is blown, the amount of power required can be reduced by about 30% compared to the conventional system.
The system is maintenance-free and has long-lasting performance, earning it the No. 1 market share in Japan.

<Delivery results> Target water volume (cumulative)



Main environmental technology

Thermal manipulation technology

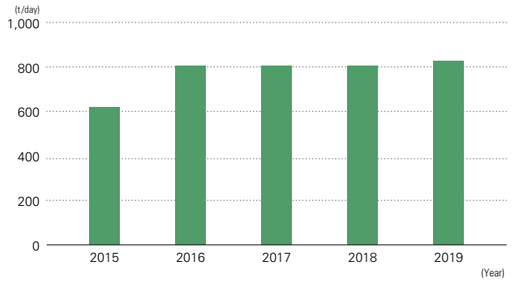
Thermal manipulation technology that converts waste into fuel

Wastewater sludge fuel system

As a general rule, sewage sludge in urban areas is dehydrated to reduce the amount of moisture present and then incinerated. The ash generated from the incineration is effectively used as a raw material for cement, etc.
METAWATER's "wastewater sludge fuel system" is a technology that produces fuel (carbon) by steaming and incinerating sewage sludge. The fuel produced is valuable and can be sold, and is effectively used as an alternative fuel source to coal in thermal power plants, etc.
There are high expectations for wastewater sludge fuel to be a new effective use of sewage sludge.

Wastewater sludge fuel

<Delivery results> Treated capacity (cumulative)



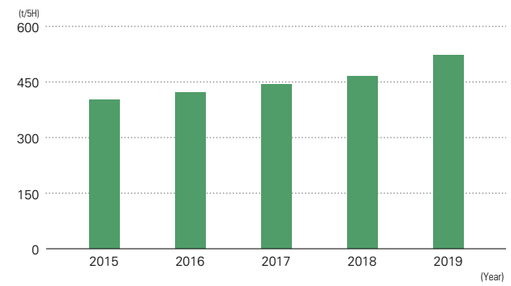
Resource environment technology

Improved plastic sorting efficiency and accuracy

Domestic waste recycling system

The amount of waste plastics generated in Japan is said to be over 9 million tons a year, accounting for approx. 2% of all waste. Waste plastics are subject to import restrictions by countries such as China, and marine pollution, etc., caused by microplastics has attracted attention as a major social and environmental problem. In addition to reducing emissions, the importance of recycling resources is also becoming more important. However, in order to recycle waste plastics, in addition to the manual removal of refuse required, lightweight items such as plastic bags, and heavy items such as detergent bottles, need to be separated.
For many years, the METAWATER Group has been developing equipment that improves efficiency and accuracy in manual sorting work by utilizing differences in specific gravity in order to improve the recycling rate of plastics.
Since the risk of explosions or fires caused by contamination of items such as spray cans and lithium batteries is increasing at crushing and sorting facilities, we are also contributing to facility safety through the development of a system that prevents the spread of fires, detecting and extinguishing them quickly in the event of an accident. As of FY2019, approximately 300 of our domestic waste recycling systems have been delivered.

<Delivery results> Treated capacity (cumulative)

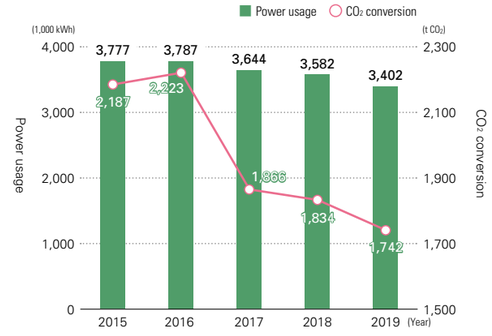


Activities for reducing environmental burdens

Promoting energy-saving measures

METAWATER has set a goal of "a 1% reduction compared to the previous year" with regard to office power consumption and is actively implementing office lighting reduction activities.
Various initiatives are being explored to reduce the amount of electricity used. Lights are turned off during the lunch break, PC monitors are turned off when employees step away from their desk (energy-saving and security measures), and in addition to work-style reforms (introduction of a 4-day workweek, telecommuting, etc.), there are also "Super Refresh Days", where employees are asked to leave at a specific time and all the lights are turned off.
As a result, our electricity usage in FY2019 decreased by 5.0% compared to the previous year, and CO_2 emissions were also reduced by 4.7%.

Power usage (office)



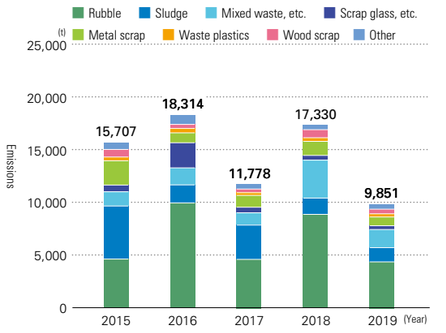
Promoting paperless work environment and purchasing eco-friendly items

Since FY2013, METAWATER has abolished the paper-based distribution of meeting materials at executive meetings, instead shifting to the use of tablets to view materials. This meeting format has already been introduced at other general meetings, as we continue our work to achieve a paperless work environment throughout the company. At the same time, we are promoting green purchasing of office supplies, and nearly 100% of the paper we use internally is certified by the Forest Stewardship Council.

Initiatives regarding industrial waste

Although the amount of industrial waste generated by our business activities (office and domestic construction work) varies depending on the type of construction work and the number of projects undertaken each fiscal year, a certain amount of waste is generated due to the nature of the business. To fulfill our responsibilities as a producer of waste, we are strengthening our management of industrial waste processing through ongoing departmental education, working to ensure that industrial waste is properly disposed of.
In addition, in order to promote the reuse of the industrial waste that has been created, we outsource the disposal to industrial waste treatment companies that have recycling facilities. The recycling rate of the industrial waste that we primarily create, such as debris, sludge, and mixed waste, is 95.3%.

Changes in industrial waste emissions (by type <within Japan>)



Promoting the adoption of electronic manifests

By selecting companies that support electronic manifests, we are, as a producer of waste, making the status of industrial waste processing visible, and continually strengthening monitoring through an advance application for the use of a paper-based manifest. Depending on local conditions, in some cases we had to use a company only handling paper manifests. However, in FY2019, the adoption rate was 97.3%, only a 1.0% decrease from the previous year, allowing us to maintain a similar level of adoption (nationwide adoption rate of electronic manifests: 63%). We will continue working to increase the adoption rate of electronic manifests while paying attention to local conditions.