Efforts against Global Warming by the Sanitary Equipment Industry
- FY2024 Results for Carbon Neutrality Action Plan -

1st April 2026

Japan Sanitary Equipment Industry Association

Contents

1. Overview of the Sanitary Equipment Manufacturing Industry (1)

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■ Manufacturing Industry of Sanitary Equipment

- Water closets, urinals, wash basins, etc.
- Plumbing equipment (residential and public)



■ Industry size (FY2024)

- Number of companies: 3
- Participating companies: Janis Ltd., LIXIL Corporation, TOTO LTD. (in alphabetical order)
- Market size: approximately 749.3 billion yen


■ Current State of Industry

As social and economic activities continued to normalize after the coronavirus pandemic in FY2024, a gradual recovery continued. In regard to housing investment, the number of new housing increased slightly to 816,000 units (up 2.0% from the same period last year), and the demand for renovation decreased slightly.
The production value, which is an indicator of the amount of production activity in the industry, increased from last year and was 749.3 billion yen (up 4.8% from the previous year, 14.8% increase from FY2013).

1. Overview of the Sanitary Equipment Manufacturing Industry (2)

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■ Overview of sanitary ceramics production process (representative products of the industry)

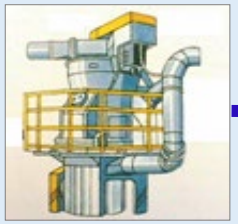
- About 60% of energy consumption in sanitary ceramics production process is in the firing process.
- Energy consumption of the entire industry including other production processes is about 55% of electricity, about 45% of fuel.

Raw Materials

Auxiliary Materials

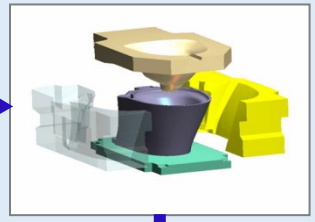
Fuel

Fine Grinding

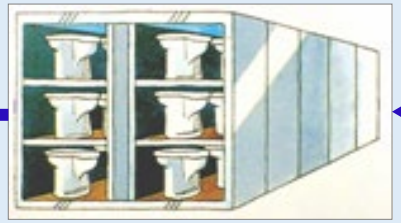


Curing

Casting

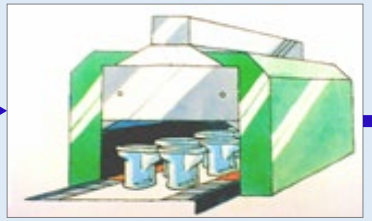


Drying



Glazing

Firing



Inspection

Packing and Shipping

Products

Recycle Raw Materials

Source: Ministry of Economy, Trade and Industry / Trash clipart

Waste - Emissions

Source: Ministry of Economy, Trade and Industry / Trash clipart

1. Overview of the Sanitary Equipment Manufacturing Industry (3)

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■ Efforts for Low Carbon Society Achievement Plan and Carbon Neutrality Action Plan

*Was active as (former) Japan Sanitary Equipment Industry Association until 2014

FY2001	Participated in the Keidanren Voluntary Action Plan on the Environment (Section on Global Warming Measures) "Target: Reduce CO_2 emissions from production bases by 20% or more in FY2010 compared to FY1990"
FY 2005	Participated in the Ministry of Economy, Trade and Industry's "Global Warming Countermeasures Initiatives" and started reporting
FY2007	Keidanren Announces Raising Targets in the Voluntary Action Plan "Target: Reduce CO_2 emissions from production bases (average value for the five years of FY2008~FY2012 during the first commitment period of the Kyoto Protocol) by 25% or more compared to FY1990"
FY2010	Participated in the Keidanren's commitment to a Low Carbon Society and set targets for (Phase I) "Phase I Targets: Reduce CO_2 emissions from production bases by 35% or more in FY2020 compared to FY1990"
FY2013	Report of results of the first commitment period of the Kyoto Protocol ⇒Average actual value for FY2008~FY2012 reduced by 50.3% compared to FY1990... Target of the Voluntary action plan achieved
FY2014	Targets for the Keidanren's commitment to a Low Carbon Society (Phase II) set "Phase II target: Improve CO_2 emission intensity of production by 49% in FY2030 compared to FY2005"
FY2015	The Japan Sanitary Equipment Industry Association and the Japan Toilet Seat Association merged to form the Japan Sanitary Equipment Industry Association . The Keidanren's commitment to a Low Carbon Society continued.
FY2018	The targets of the Keidanren's commitment to a Low Carbon Society (Phases I and II) updated and announced: "Phase I: Target: Reduce CO_2 emissions from production bases by 50% in FY2020 compared to FY1990" and "Phase II: Target: Reduce CO_2 emissions from production bases by 55% in FY2030 compared to FY1990"
FY2021	Report on results of the Keidanren's commitment to a Low Carbon Society (Phase I) ⇒ Reduce CO_2 emissions from production bases by 63.3% in FY2020 compared to FY1990... Achieve Phase I targets Participated in the Keidanren Carbon Neutrality Action Plan
FY2022	Vision for Achieving Carbon Neutrality by 2050 and Phase II CO_2 Emissions Reduction Target announced "Phase II Target: Reduce CO_2 Emissions from production bases by 40% in FY2030 compared to FY2013" *Equivalent to 70% reduction compared to FY1990

Vision Towards Realization of Carbon Neutrality by 2050

Japan Sanitary Equipment Industry Association has been contributing to the betterment of living culture for people all over the world through sustainable development.
Going forward, we will continue our efforts in realizing a sustainable society by providing a safe, simple to use, and environmentally friendly restroom space.

● **Details about CO_2 Emission Reduction Activities and Vision Setting So Far**

Our industry was the first to complete the fuel conversion for firing kilns, which consume the largest amount of energy. Additionally, we have set reduction targets for 2020 and 2030 in the Keidanren’s commitment to a Low Carbon Society, and have been working to reduce emissions from our domestic business activities.
In the future, in order to contribute to the "realization of a Carbon Neutral Society by 2050" announced by the government, we will strive to further reduce CO_2 emissions under the Keidanren Carbon Neutrality Action Plan.

[First Pillar]（Emission reductions from domestic business operations）
Based on the Keidanren Carbon Neutrality Action Plan, targets have been set for 2030 to strive to reduce emissions from domestic business activities and contribute to the global warming countermeasure plan set by the Japanese government.

[Second Pillar]（Strengthening co-operation with other interested groups）
With the proliferation of water-saving toilets and energy-saving spray seat, residential, commercial, and other sectors. will contribute to the reduction of CO_2 during use.

[Third Pillar]（Promoting contribution at the international level）
The proliferation of using water-saving toilets will contribute to the reduction of CO_2 during use overseas.

[Fourth Pillar]（Development of innovative technologies toward Carbon Neutrality by 2050）
Innovative technologies for carbon neutrality, which are being studied in other industries, will be applied to the production and business activities of sanitary ware of each member company, with the aim of practical application.

■ Target Index: FY2030 (Phase II)

- Reduce CO_2 emissions in FY2030 generated at production bases by **40% compared to FY2013**.

(ref. Equivalent to a 70% reduction compared to FY1990)

■ Applicable business scope

- Domestic production bases for sanitary equipment of each company which participates in Carbon Neutrality Action Plan.

3. Emission reductions from domestic business operations (1)

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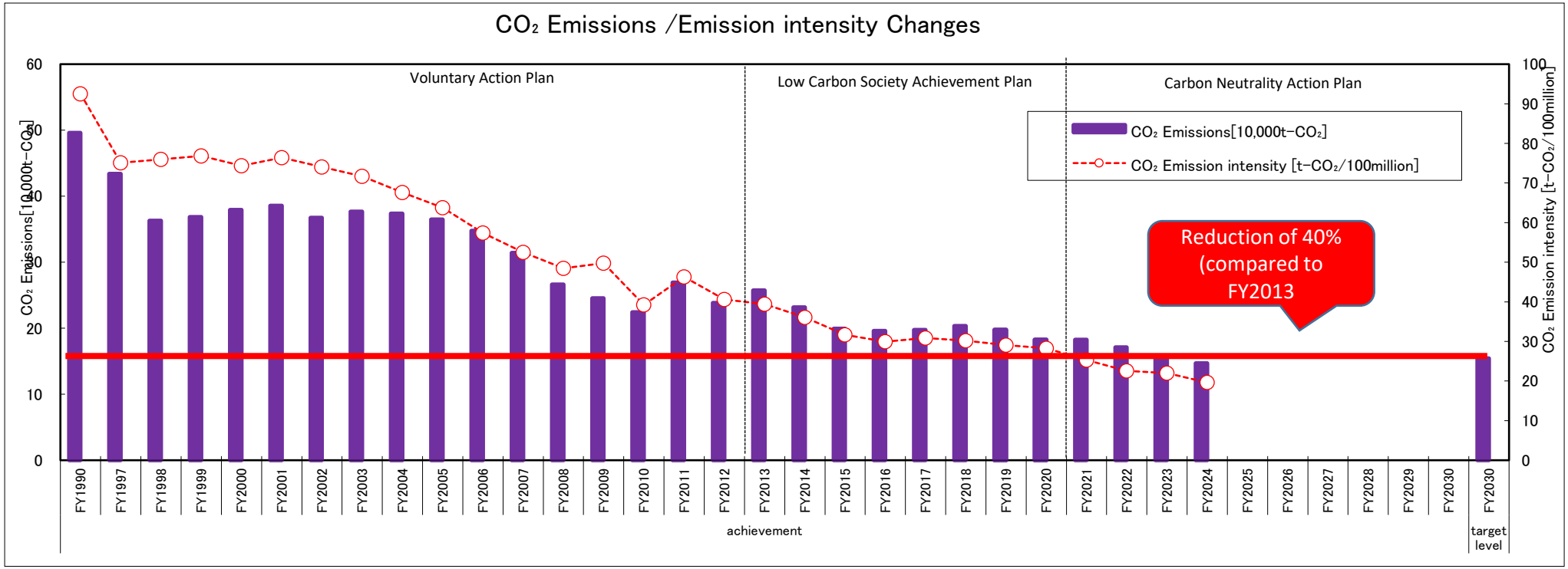
■ FY2024 Achievements

- CO_2 Emissions: 152,000 t- CO_2 (reduction of 41.0% vs. FY2013)



[Factor analysis]

Continuous energy-saving measures were implemented, such as high-efficiency equipment (production equipment, air conditioning systems, etc.) installation, switching to LED lights, installation of solar power, reduction in air consumption and improving kiln loading efficiency. As a result, CO_2 emissions decreased by 41.0% compared to the base year and 3.2% compared to the previous year, and CO_2 emission intensity decreased by 48.7% compared to the base year and 7.8% compared to the previous year.

3. Emission reductions from domestic business operations (2)

■ Measures implemented, investment amount and reduction of CO_2 emissions

Major measures implemented in FY2024	CO_2 Reduction per FY (t-CO_2)	Investment Amount (1,000 yen)
Equipment efficiency improvement, energy saving measures	2,713	800,350
Renewal of production equipment	135	332,000
Centralised Air Conditioning Control	13	4,800

Solar power generation installation

■ Examples implemented across participating companies

In FY2024, the following measurements were implemented.

- Introduction of high-efficiency equipment (air conditioning, compressors, injection moulding machines, LED lighting, power transformation equipment, etc.)
- Renewal of production equipment, process consolidation and enhancement, introduction of solar power generation
- Others, such as reducing air consumption and improving kiln loading efficiency etc.


Energy-saving and highly efficient injection molding machines

■ Analysis

During FY2024, energy-saving measures were promoted, including the renewal of energy-saving equipment, the enhancement of equipment efficiency, and the operation of solar power generation facilities. It is considered that the implementation of these measures has improved energy-saving efficiency.

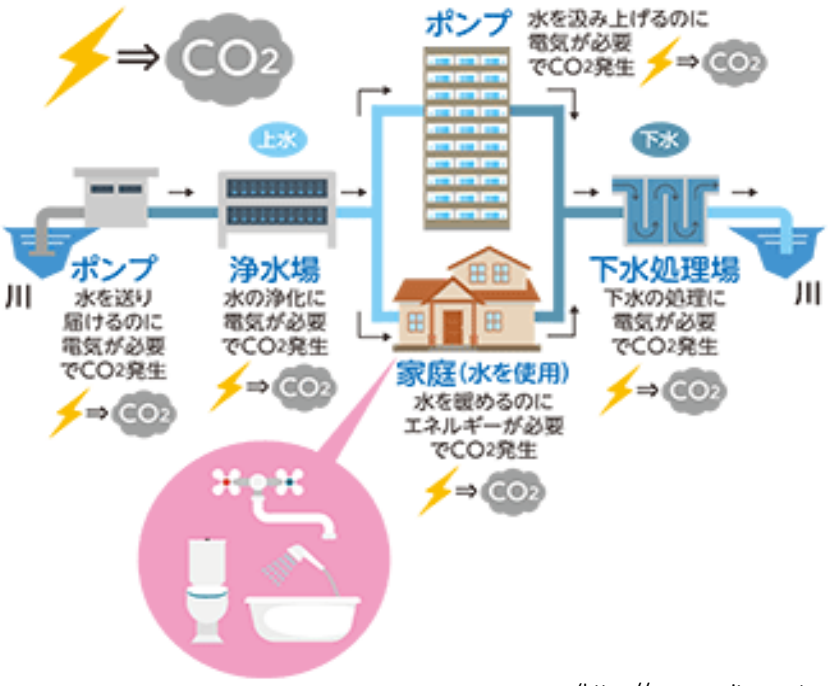

Update to latest Compressor

■ Contribution to CO_2 Reduction from Saving Water

Water consumed by toilets is connected to the water supply and sewage systems, and electricity is consumed in the process of passing through these water supply and sewage infrastructures, resulting in the emission of CO_2 (Fig. 1). Therefore, we think that saving water through the spread of water-saving toilets will contribute not only to the conservation of water resources but also to "CO_2 reduction".

■Publication of CO_2 Conversion Coefficient of Water

The industry association has compiled and published the recommendation value of " CO_2 Conversion Coefficient of Water" so that the amount of CO_2 reduction from conserving water can be calculated, and this conversion coefficient "0.44kg-CO_2 / m^3 (value announced in 2025 * 1)" is recommended in calculations.



(https://www.sanitary-net.com/saving/)

Fig. 1: Image of power saving and CO_2 reduction at water purification and sewage treatment plant due to water conservation

※ As of 1 Apr 2025

* 1 Source: "Waterworks Statistics" published by Japan Water Works Association, "National Sewage Works Database" published by Japan Sewage Works Association
Calculation of CO_2 emissions from factory wastewater, etc., are not considered.
CO_2 conversion coefficient: water supply CO_2 conversion coefficient (CO_2 emission volume ÷ water supply volume) ＋ sewage CO_2 conversion coefficient (CO_2 emission volume ÷ sewage treated water volume)
Published value: CO_2 conversion coefficients is calculated based on actual data published for the past 3 years up to FY2022 and average of the3 years

4 . Contributions in Other Sectors through Low-Carbon Products and Services (2)

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■ Improving the performance of water-saving toilets and promoting their use. Enlightenment on the website of the association.

Water-Saving Toilets

•Contribution to reducing CO_2 emissions through the spread of water-saving toilets: Approx. 3,900 t-CO_2/year

Eco-friendly toilets

Water-saving toilets・CO_2 reduction

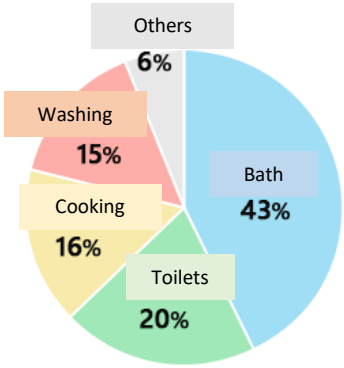
Until around 1996, the flushing water volume of the main shipments of toilets was 13 liters. If all toilets used in Japan were replaced with a water-saving toilet with a flush water volume of 6 liters, the amount of water conserved would be about 10.66 million m3 per year and the amount of CO_2 reduction converted from the amount of water conserved would be about 4,700t per year.

This means changing to the latest model with small flush water volume saves not only water, but also reduces CO_2 emissions.

※ As of 1 Apr 2025

(Reference) Water consumption when using sanitary facilities at home

According to a survey by the Tokyo Metropolitan Government Bureau of Waterworks in FY2015, among water consumed at home, water used in toilets was said to be the second highest after baths, and can contribute to the conservation of water resources by conserving the amount of wash water used each time. The amount of water flushed in toilets, which was 13L until around 1996, has improved since 2006 by the efforts of companies participating in this industry, and the performance of water-saving toilets has improved and their use has progressed, resulting in water-saving toilets of 6L or less. 6L water-saving toilets contribute to water saving by about 60% compared to 13L toilets. (For a family of 4, about 45,260L per year, industry estimate)



Source: Bureau of Waterworks, Tokyo Metropolitan Government, FY2021 Fact-finding Survey by Purpose of General Household Water Use

- Amount of contribution to CO2 emission reduction: Amount estimated by multiplying the difference between the annual amount of flush water per unit of non-water saving and water-saving toilets by the number of water-saving toilets shipped this fiscal year and using the CO2 conversion factor for water.
- Non-water-saving toilets: Toilets with average flush water volume in the market stock (estimated by the Japan Sanitary Equipment Industry Association)
- Water-saving toilets: All water-saving toilets are calculated as water closets with large flush: 6L, small flush: 5L.

4 . Contributions in Other Sectors through Low-Carbon Products and Services (3)

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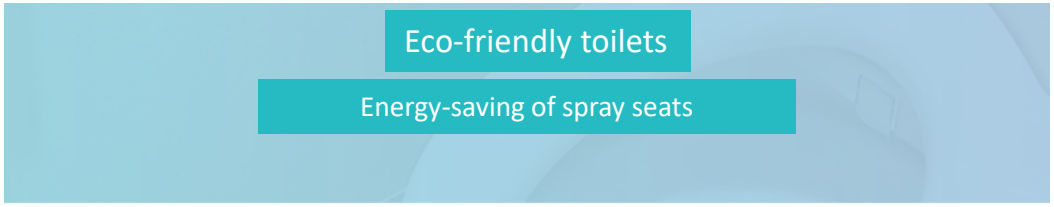
■ Improve the performance and promote the use of energy saving spray seats, and raise awareness on the website of the Association.

Spray Seats

- **Energy saving (compared to 2008) Hot water storage type: Approx. 22% energy saving Instantaneous type: Approx. 30% energy saving**
- **Contribution to reducing CO2 emissions through the proliferation of energy-saving spray seats 48,800 t-CO2/year**

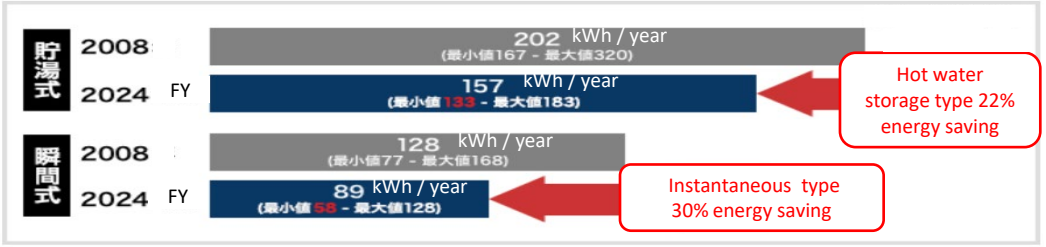
<Industry Association web pages "Energy-saving spray seat">
http://www.sanitary-net.com/saving/ecology.html



Spray seat is "a seat that has function to cleanse bottom with hot water".
According to the Cabinet survey (March 2016), penetration rate for households is about 80%. This means many families use spray seats. Energy-saving products save electricity charge and reduce CO_2 emissions.

Annual power consumption is the amount of power consumed in one year when the spray seat is used in an average manner at home.

■ *Comparison of annual power consumption with spray seats in 2008*



** Source: A Simple average value in the model list described in "Energy Saving Performance Catalog Winter 2008 Edition", "Energy Saving Performance Catalog 2024 edition " of the Agency for Natural Resources and Energy, Ministry of Economy, Trade and Industry.*

<Industry Association web pages "How to choose a spray seat">
http://www.sanitary-net.com/saving/ecology02.html

Various Power Saving Function are Included for Points to Select Products
*Energy saving technology of evolving spray seats.

Power saving control	Timer power saving	Stop power to the heated toilet seat and hot water tank for a certain period of time.
	Automatic power saving	-Power saving with learning function- Learn what time period the toilet is not being used much and lower heating during that time.
Automatic open and close toilet Lid	Sensor will automatically open the lid when approached and close when leaving and prevents forgetting to close the lid. This improves the warming function of the heated seat and is effective in power saving.	
Instantaneous type (hot water)	Since water is heated only when using the bidet or rear wash, there is no need to maintain heating and saves power.	
Momentary heating toilet seat	Saves power when heating seat is not in use.	
Toilet lid that fits shape of toilet seat	Prevents heat dissipation from sides of toilet seat.	
Toilet lid that covers main unit	Prevents heat dissipation from gaps between toilet seat and main unit.	

● Contribution to CO2 emission reduction: Based on the annual power consumption of the current standard (FY2012 standard), the difference in the annual power consumption of each energy-saving product shipped, in other words, the amount of electricity saved, is multiplied by the CO2 conversion factor of electricity*, and the total amount is the contribution to CO2 emission reduction. (*The preliminary Figure of FY2024: 4.16t-CO2/10,000 kWh (Japan Business Federation source 2025 Sep 4))

● Hot water storage type: The water in the tank is heated by a heater, and can be cleaned with plenty of hot water at once, but electricity is required to keep the hot water warm.

● Instantaneous type: There is no tank, and the water is heated with an instantaneous water heater for each use. Since no electricity is required to keep the hot water warm, the power consumption is lower than the "storage type", but the amount of hot water is limited. It also momentarily requires a large amount of power.

■ Popularization of water-saving appliances due to revision of JIS A5207 (sanitary wares)

By establishing water volume classification for urinals, unifying testing methods, and additional settings for the JIS code for water closets, it is expected that this will serve as guidelines for the promotion of water-saving equipment as well as for product procurement and selection and that popularization for use of such products will contribute to water resource conservation and reduction of CO2. In June 2022, the ISO31600 (Water Efficiency labeling programmes – Requirements with Guidance for Implementation) was enacted, and JIS A5207, which is consistent with ISO, was revised and published in August 2022.
The JIS is currently in operation.

Contribute to water resource conservation and CO2 reduction by revising JIS A5207 (sanitary wares)

[Flush volume classification of water closets]

Type	Classification	Flush Volume (L)	
Water closet	Type I	8.5 or less	–
	Type II	6.5 or less	*Water-saving type
Urinal	Type I	4.0 or less	*Water-saving type
	Type II	2.0 or less	*Water-saving type

[Types of Urinals]

Type	Type Name			Type I	Type Ⅱ
	Water supply system	Installation	size		
Urinal	Flush valve-type	Floor-mounted	Large	○	–
			Small	○	–
		Wall-mounted	Large	○	–
			Small	○	–
	Dedicated flush valve-type	Floor-mounted	Large	–	○
			Small	–	–
		Wall-mounted	Large	–	○
			Small	–	–

*Water closets Type Ⅱ, Type Ⅰ and Ⅱ of Urinals are clearly stated as “Water-saving type”

[Types of Water closets]

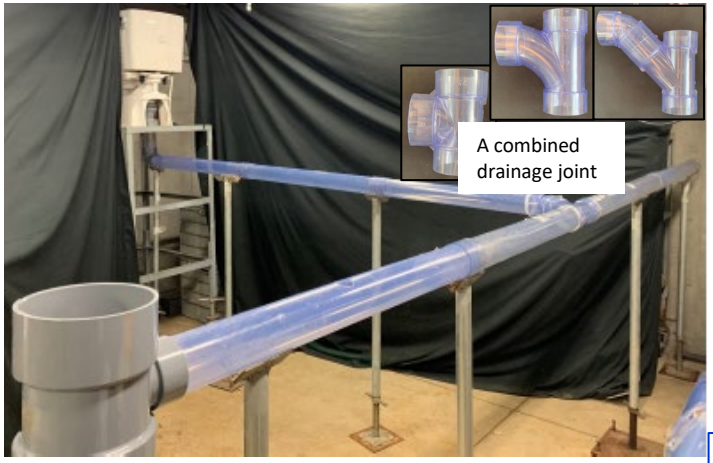
Type	Type name			Type Ⅰ	Type Ⅱ
	Water supply system	Installation	Drain		
Water closet	Tank-type	Floor-mounted	Floor drain	○	○
			Wall drain	○	○
		Wall-mounted	Wall drain	–	–
	Flush valve-type	Floor-mounted	Floor drain	○	○
			Wall drain	○	○
		Wall-mounted	Wall drain	○	○
	Dedicated flush valve-type	Floor-mounted	Floor drain	–	○
			Wall drain	–	○
		Wall-mounted	Wall drain	–	○

■ Activities to further popularize water-saving toilets

The waste transport distance is affected by the installation conditions of the drainage pipes. We edited the results of transport tests (paper published by the Society of Heating, Air-Conditioning and Sanitary Engineers of Japan) with the cooperation of university in which the drainage piping conditions (elbow pipe position, junction drainage joint types) and continuously disclosing them on the JSEIA website as useful data for the piping design. We are currently investigating the impact of the foreign objects stagnation on its transport performance by using the combined piping model, which is released on JSEIA website. And we are underway to share additional findings. Through disclosing and disseminating the impact of drainage piping, it is expected to further promote the popularization of water-saving toilets by improving the performance of waste transport, contributing to the conservation of water resources, and the reduction of CO2 emissions.

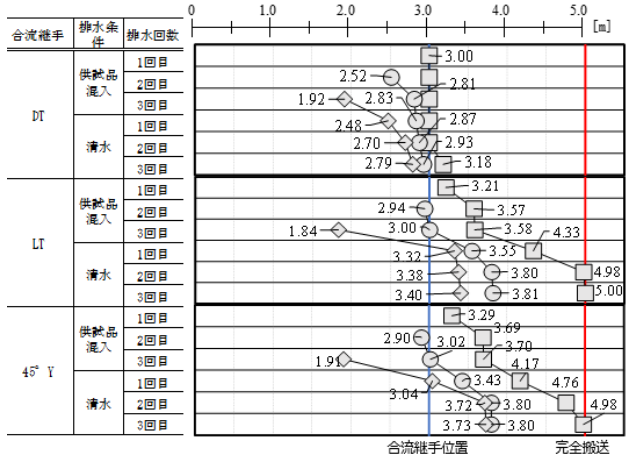
Activity： **Investigate into the difference in transport performance depending on junction drainage joint types and the situation when foreign matter is stagnating inside the pipe.**

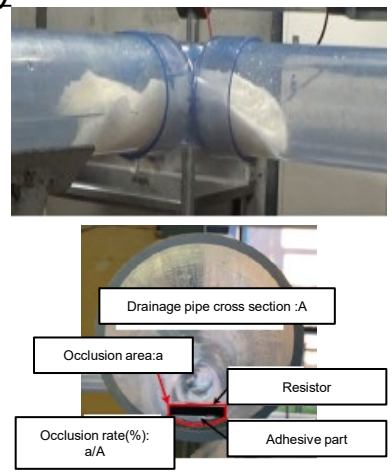
1) Experimental conditions



■ Junction drainage joint:3 types(DT、LT、45°Y)
■ Test media:6 types (toilet paper, baby wipes, etc)
■ Flushing conditions :2 patterns
■ Location of the foreign objects stagnation :2 patterns

2) Experimental results (examples)





● It is preferable to connect either an LT joint or a 45° Y-joint at the junction point.
● Excessive use of toilet paper should be avoided because thicker and overuse of toilet paper causes stagnation.
● Not to flush any other objects except toilet paper, as this may cause stagnation or backflow.
⇒ The experiment results and a warning will be shared on the association's website next FY.

5. Efforts for the household and other sectors

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■ Efforts to dispatch information

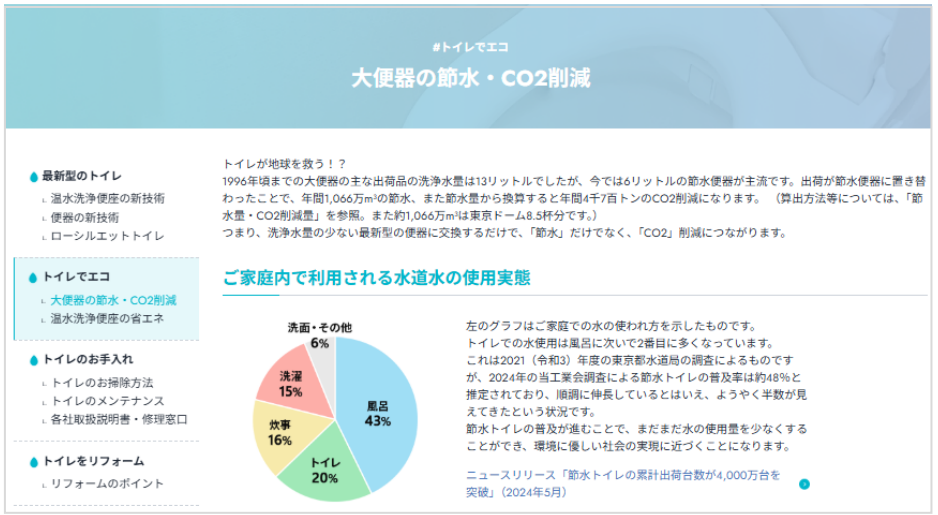
The association website introduces Carbon Neutrality Action Plan, CO_2 reduction through water conservation, energy saving, and related efforts .

Carbon Neutrality Action Plan (Japanese)

https://www.sanitary-net.com/association/plan.html

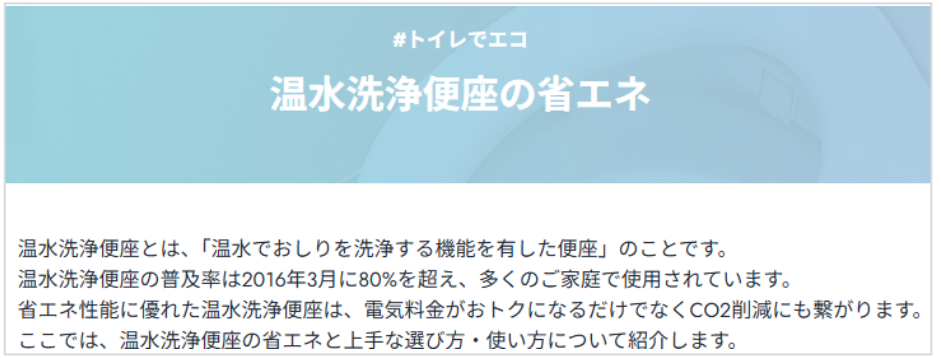
Carbon Neutrality Action Plan (English)

https://www.sanitary-net.com/global/about/plan.html



Water conservation of W.C. / CO_2 reduction

https://www.sanitary-net.com/saving.html



Energy saving of spray seats

https://www.sanitary-net.com/saving/ecology.html

6. Promotion of International Contributions

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■ Contributing Internationally by Popularizing Water-Saving Toilets

- In order to popularize water-saving toilets overseas, participated in the promotion of the Green Building Materials Project (common name for the Ministry of Economy, Trade and Industry project commissioned by the Japan Building Materials and Housing Equipment Industries Association) and is continuing activities to introduce Japan water-saving toilet standards to ASEAN countries. In FY2024, Seminars or workshops was held to promote discussions with ASEAN countries using the ACCSQ (ASEAN Consultative Committee on Standards and Quality) and the importance of water conservation and toilet standards reflecting Japan's water-saving initiatives were introduced.
- Discussions with ASEAN countries using the ACCSQ will also be held in FY2025, and water conservation activities will be promoted by attending events in those countries.

Information development activities for international standards on water saving rules for the proliferation of water-saving equipment

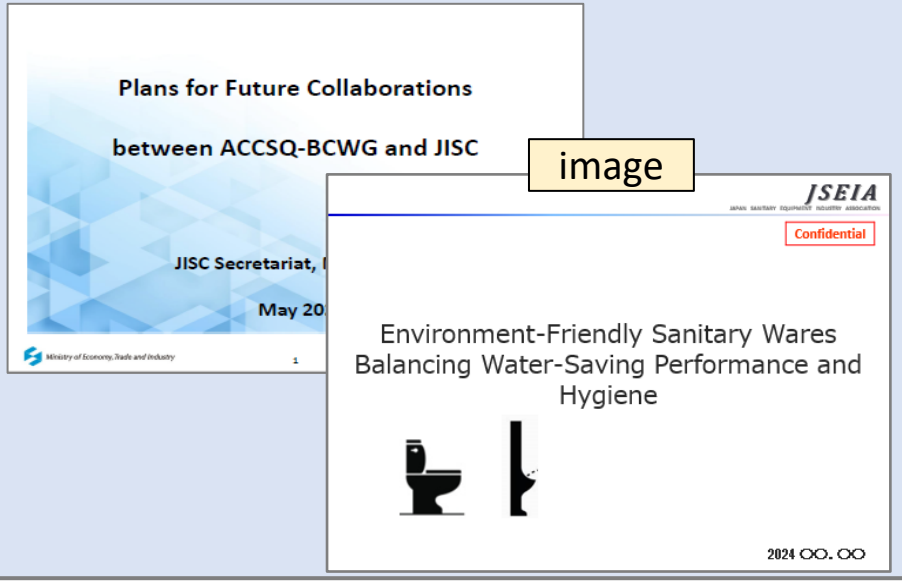
● ISO31600 has been published in June 2022. Exchanged opinions with ASEAN countries that have not standardized water conservation rules.

【Draft ISO 31600 Requirements】
Should include the following in existing national standards of each country:
①Product testing method
②Water saving effect evaluation criteria
③Labelling &/or Rating

Conforms to ISO if compliant

[Exchange of Opinions on Water Conservation Rules with ASEAN Countries]
1) July 2024: A Workshop held within the ACCSQ
2) Nov 2024: Presentation at the Vietnam ICBM conference
→ The Importance of Water Conservation and Japanese Standards were also shared.

● Expand information of ISO 31600 and JIS A 5207 which covers both hygienic and water efficiency to ASEAN countries.
Participate in events themed around water conservation and plan for presentations and promote the plans



7 . Other efforts

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■ Top Runner Programme Initiatives

The association's website explains the top-runner standards for spray seats and promotes their adoption.

トップランナー基準とは？ https://www.sanitary-net.com/saving/ecology02.html

「エネルギー消費機器のうち省エネ法で指定するもの（特定機器という）の省エネルギー基準を、各々の機器において、基準設定時に商品化されている製品のうち最も省エネ性能が優れている機器の性能以上に設定する」というものです。1998年（平成10年）の省エネ法の改正で、特に民生・運輸部門のエネルギー消費の増加を抑えるため、エネルギーを多く使用する機器毎に省エネルギー性能の向上を促すための目標基準（「トップランナー基準」）が設けられました。

■温水洗浄便座（電気便座）のトップランナー基準

（1）目標年度　2012年度（平成24年度）※現在も継続中

（2）目標基準値

区分名	洗浄機能の有無	貯湯タンクの有無	目標基準値（kWh/年）
A	暖房便座（洗浄機能無し）	ー	141
B	温水洗浄便座（洗浄機能有り）	貯湯式（貯湯タンク有り）	183
C		瞬間式（貯湯タンク無し）	135

■ SBT(Science Based Target) Initiatives

3 companies have been certified under the SBT Initiative for the “1.5°C target”.

2 of these companies have already obtained net-zero certification.

SCIENCE BASED TARGETS
DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

JSEIA

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