

(Joint Release)

July 22, 2025
Maruyama
Manufacturing Co.,
Ltd. JALUX Co., Ltd.

Introduction of "Ultra-Fine Bubble" Warm Water Washing Machines on Hakone Tozan Buses

- Removes calcium chloride from de-icing agents using microscopic bubbles, enhancing vehicle cleaning efficiency and reducing environmental impact -

- The MUFB hot water washing machine, featuring Maruyama Manufacturing's Ultra Fine Bubble technology, has been introduced to Hakone Tozan Bus
- Effectively removes dirt and oil stains caused by de-icing agents from bus vehicles using ultra-fine bubbles
- Contributes to environmental friendliness by reducing water and fuel consumption through improved cleaning performance and shorter cleaning times

Maruyama Manufacturing Co., Ltd., a company specializing in the manufacturing and sales of industrial machinery with pump technology and engine technology as core technologies

(Headquarters: Chiyoda-ku, Tokyo; President and CEO: Tsuyoshi Uchiyama, hereinafter referred to as "Maruyama Manufacturing") and JALUX Co., Ltd. (JALUX, headquartered in Minato-ku, Tokyo, President and CEO: Toshio Kawase, hereinafter referred to as "JALUX"), a trading company of the JAL Group, are pleased to announce the introduction of Maruyama Manufacturing's "MUFB Hot Water Washing Machine" for vehicle cleaning on Hakone Tozan Buses, which operate route buses primarily in Odawara City and Hakone Town.



Hakone Tozan Bus vehicles



MUFB Hot Water Washing Machine

JALUX, as a sales agent for Maruyama Manufacturing Co., Ltd., has been actively promoting the use and adoption of ultra-fine bubbles across various fields, including restaurant backyards, aquaculture facilities, and dental units. The introduction of the "MUFB Hot Water Washing Machine" for vehicle washing in buses marks the second implementation case following the introduction to Abashiri Bus in November 2024. *1

*1: Previous implementation cases

July 25, 2022 press release: Ultra-Fine Bubble Generation Device Introduced Across All Domestic Stores of Kura Sushi
<https://www.jalux.com/news/2022/UFB-kurasushi.html>

July 1, 2024 press release: Ultra-Fine Bubble Generator Installed in Primary Storage Tanks at Tomakomai Fisheries Cooperative
<https://www.maruyama.co.jp/news/pdf/20240701.pdf>

September 18, 2024 Press Release: Ultra-Fine Bubble Generator MUFB Ultra Joint for Dental Units Now Available
<https://www.jalux.com/news/2024/jalux-mufb.html>

November 21, 2024 Press Release: Ultra-Fine Bubble Generator Installed in Abashiri Buses
<https://www.maruyama.co.jp/news/pdf/20241121.pdf>

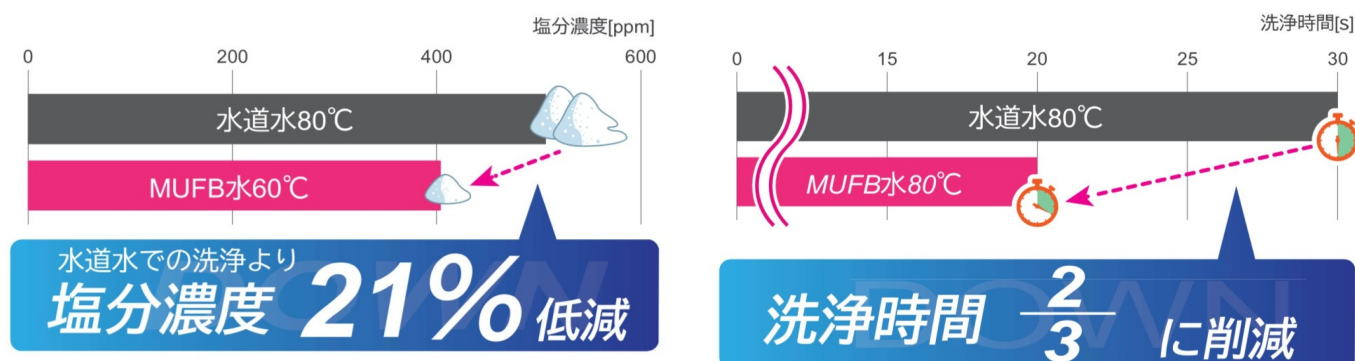
[Solving Bus Company Challenges with Ultra-Fine Bubbles]

The "MUFB Hot Water Washing Machine" uses ultra-fine bubbles—tiny bubbles with a diameter of less than 1 micrometer—to penetrate even the smallest corners of dirt, peeling it away to enhance cleaning power and reduce cleaning time. This environmentally friendly product contributes to reducing water and fuel consumption. Particularly effective against salt damage caused by sea breeze in coastal areas and de-icing agents in cold regions, the system reduces salt concentration by approximately 21% when using 60°C ultra-fine bubble water compared to 80°C tap water, and reduces oil removal time by two-thirds while achieving approximately 1% oil removal.

(According to Maruyama Manufacturing Co., Ltd. For test conditions and measurement results, refer to the figure below.)

The Hakone region, where Hakone Tozan Bus operates, experiences heavy snowfall and road icing in winter, leading to the use of calcium chloride as a de-icing agent on roads. This calcium chloride adheres to vehicles along with mud and fallen leaves, causing corrosion, making its efficient removal a challenge. With the introduction of the MUFB hot water washing machine, the company has achieved shorter vehicle washing times, improved operational efficiency, reduced water and fuel consumption, and effectively removed calcium chloride—a key challenge—thereby suppressing vehicle corrosion and deterioration and extending vehicle lifespan.

塩分濃度測定結果 ※洗浄前塩分濃度 約1,100ppm(洗浄時間10秒) **油分濃度測定結果** ※約1%の除油を完了させるまでの作業時間差



[Comments on the introduction of the MUFB hot water washing machine]

Hakone Tozan Bus Co., Ltd. Maintenance Workshop Mr. Takahashi

"I was amazed at how well it removed oil stains. The high-viscosity grease used around the steering mechanism tends to flow along the surface of the components and gather on the opposite side of the water flow when high-pressure washing is applied, making it difficult to remove. However, the MUFB hot water washing machine effectively removes dirt in a short time, significantly reducing cleaning time. Additionally, as our company primarily operates in the Hakone area during winter, where large amounts of de-icing agents are spread, undercarriage cleaning is an essential maintenance task for vehicle upkeep. The reduced cleaning time also allows for increased cleaning frequency, which we expect will greatly contribute to vehicle maintenance."

Hakone Tozan Bus Co., Ltd. Transportation Department Mr. Sugiura

"The optional undercarriage cleaning equipment for the MUFB hot water washing machine is excellent."

■ MUFB Hot Water Washing Machine

Dimensions (Length × Width × Height)	mm	656 × 605 × 1030
Weight	kg	117
Discharge volume	L/min	14
Accessories		Cleaning gun, cleaning hose 3/8 × 10 m
Power supply/motor		Three-phase 200V, 2.2 kW
Pressure	MP	3–8

[What are Ultra Fine Bubbles?]

Fine bubbles are composed of "water" and "air," making them environmentally friendly and applicable to various fields, contributing to the achievement of the SDGs. Bubbles with a diameter of less than 100 micrometers (0.1 millimeters) are called fine bubbles, and among these, those with a diameter of less than 1 micrometer—so small they are invisible to the naked eye—are called ultra-fine bubbles. They offer cleaning effects, promote plant growth, improve water quality, and when mixed with gases, produce various effects, leading to advanced applications in diverse fields such as industry, medicine, agriculture, and fisheries.

About Maruyama Manufacturing Co., Ltd. (<https://www.maruyama.co.jp/>)

A Tokyo Stock Exchange Standard-listed company celebrating its 130th anniversary. Under the brand statement "Creating the Next 100 Years - All for the Future," the company is committed to providing environmentally friendly technologies and products across a wide range of fields, including agriculture, industry, and consumer goods, utilizing Japan-originated cutting-edge technology—ultrafine bubbles.

About JALUX Co., Ltd. (<https://www.jalux.com/>)

JALUX is a trading company within the JAL Group, operating in diverse fields including aviation and airports, insurance, real estate, environmental equipment, e-commerce, and food. Under the corporate philosophy "Partner in Creating Happiness—Bringing More Richness and Brilliance to People, Society, and the Environment," we strive to contribute to solving our customers' challenges and realizing a prosperous society by proposing innovative technologies and products.

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