Patented Ultra Fine Bubbles Generating Nozzle

Small Technology. Big Market Shift.
Own the Next Water Technology Market

June 2026

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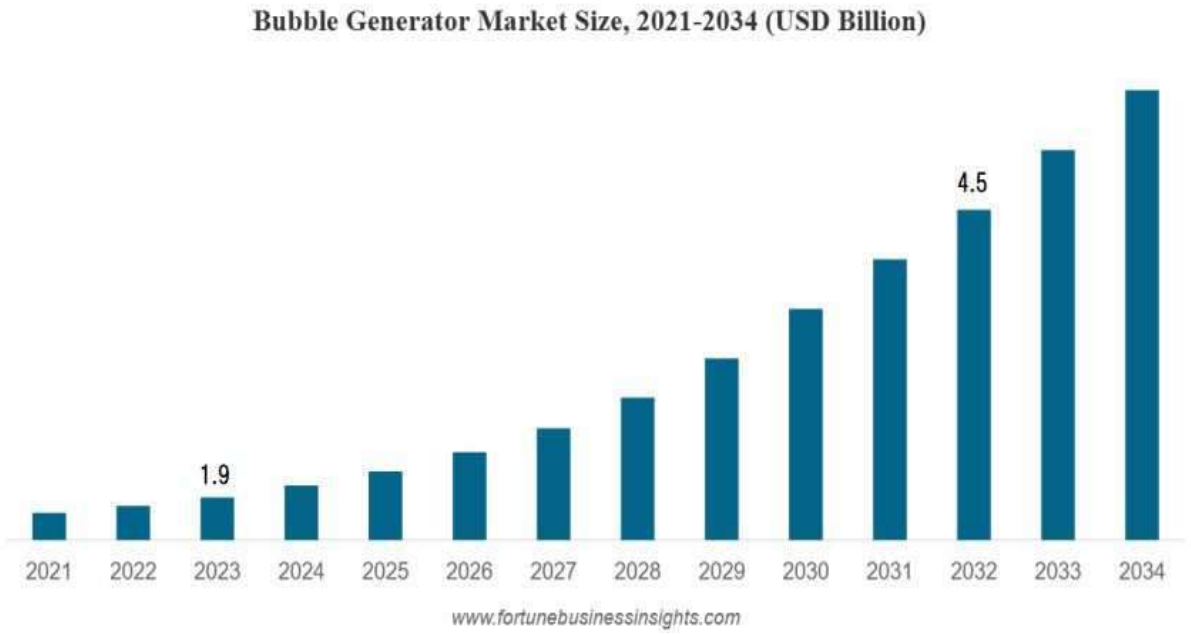
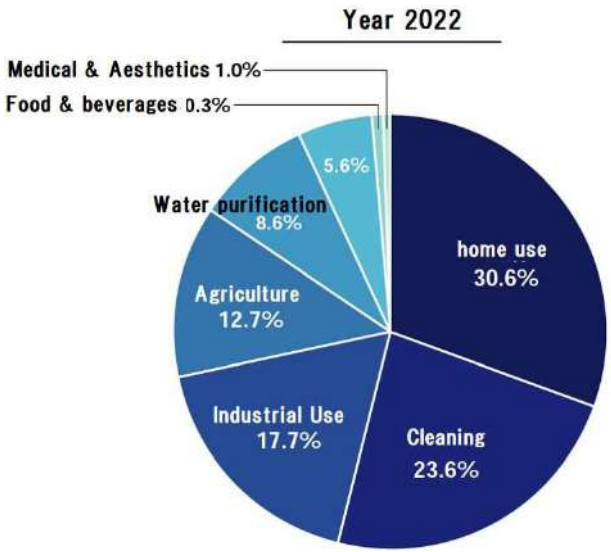
MRT Corporation

Global UFB(Ultra-Fine Bubble) market growth

- The market was valued at around US$1.9 billion in 2023 and forecast to reserch US$4.5 billion by 2032, growing at a CAGR(Compound Annual Growth Rate) of more than 10%.





Comparison

Conventional Product VS. Our UFB Nozzle

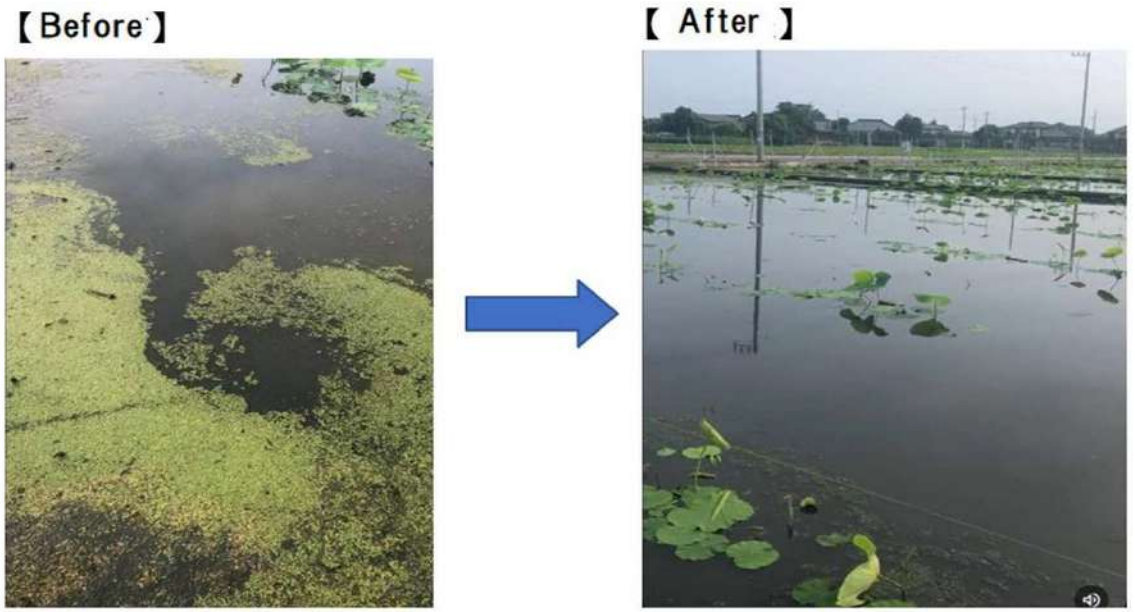
Item	Conventional	Our Squash
Types of Bubbles	Micro　Bubbles 0.001mm－0.1mm	Ultra Fine Bubbles 0.001mm or smaller
Qty in the 1mL water	Low cost products: Approx.1000 bubbles General: 3000 - 6000 bubbles High-end products:～100Million bubbles	Approx. 300 Million Bubbles (Measured using a SHIMADZU analyzer ※１)
Benefits	Faster growth Lager size crops	Higher Brix Increased yield of well-formed crops
Price	Low cost:　JPY10,000- Standard: JPY300,000=600,000 Premium:Approx.1,000,000-	JPY15,000-/pc.

※１：Defined by JIS standards for measurement using SHIMADZU analyzer
Measured using advanced analytical equipment at a Japanese public industrial research institute under professional supervision

Remove Heavy Oil Without Detergent Using Only Warm UFB Water

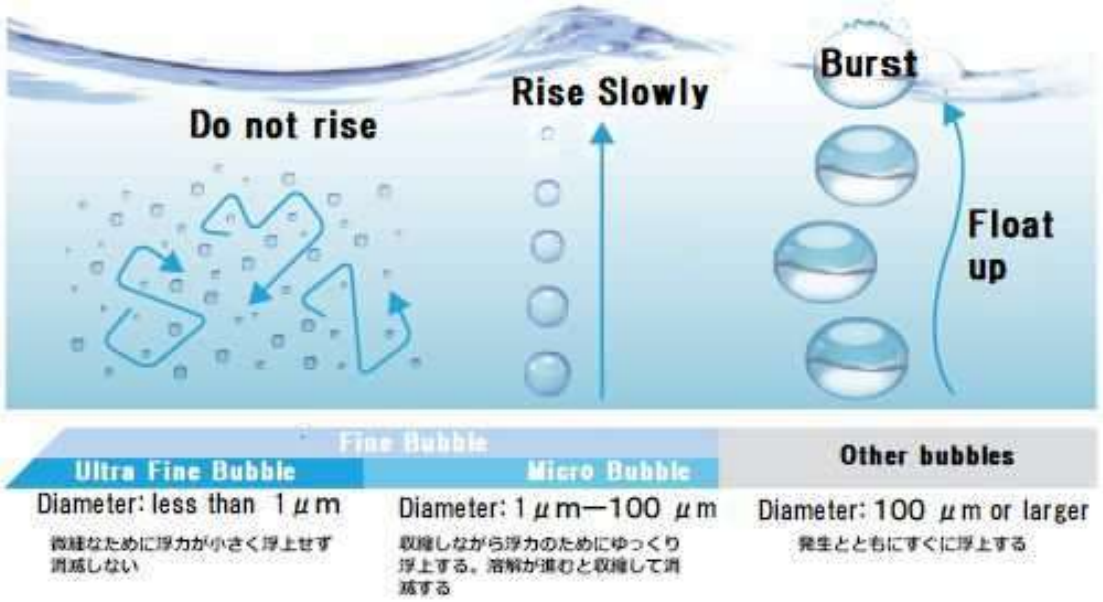
At a restaurant kitchen in Tokyo,
even frying pans heavily soiled with meat sauce (1)
and olive oil can be cleaned easily using UFB water.
Restaurants Cut Detergent Costs by 50%
Detergent consumption was reduced to less than half of the conventional level, resulting in significant cost savings.
With 41° C Ultra-Fine Bubble water, grease and oil residues lift away from the surface.(2)
Simply wiping with a sponge leaves the pans sparkling clean
even without detergent. (3) Slime and biofilm buildup
in the drainage system also disappeared (4).

The pond purification (restoration)



- This pond restoration program is designed not as a temporary fix, but as a long-term solution to maintain clean and healthy water conditions.
- Using Ultra-Fine Bubble (UFB) technology, the system helps restore the pond to a more natural and balanced state by reducing odor, algae, and bottom sludge.
- After installing six UFB systems, visible improvement was observed within approximately three days.

Ultra-Fine Bubble Technology



Real-World Applications

- Cleaning: Adopted by a long-established confectionery shop in Tokyo.
- Sterilization: Used for shijimi and hamaguri clams.
- Agriculture & Aquaculture: Faster growth, higher sugar content, premium quality.

Breakthrough Performance of our product

Up to 300 million ultra-fine bubbles generated in a single pass. A rare level of performance globally.

Using SQUASH increases the sugar content (Brix) of crops.

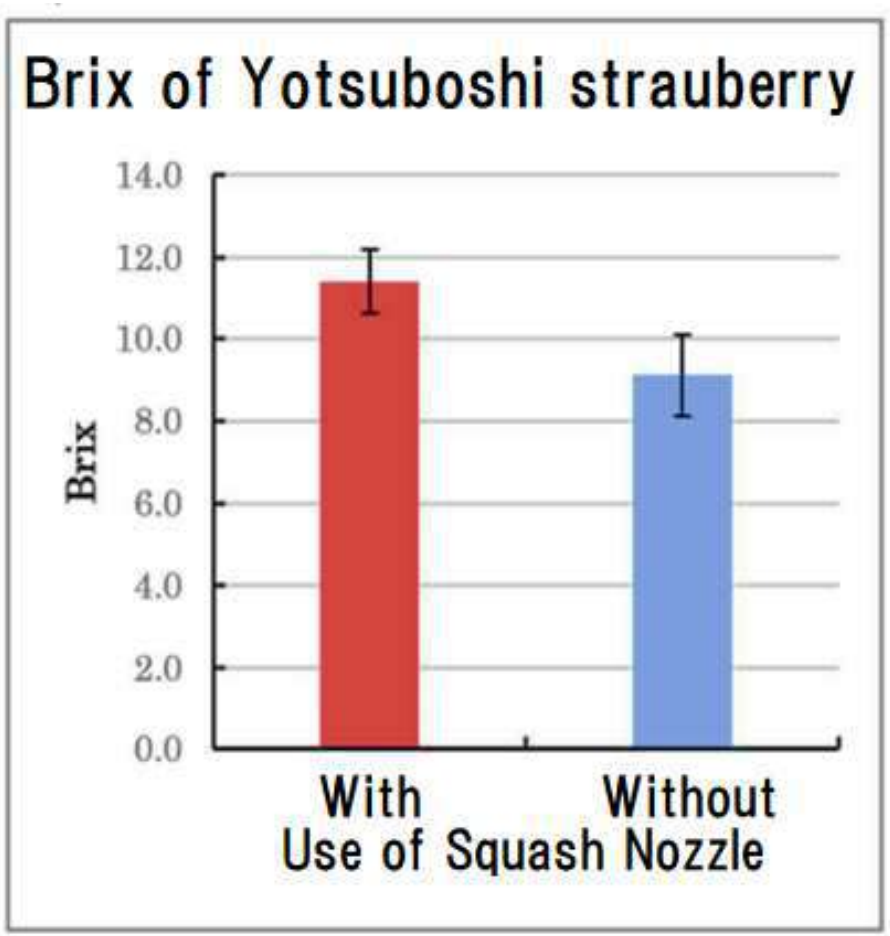
Based on OMU strawberry tests and tomato farm trials.
Farmers are already producing higher-value crops.

- Selected as a premium product by Izumo City
- Higher premium-grade yield
- Award-winning tomatoes
- More sellable crops = higher revenue

You are not selling a nozzle.
You are selling higher profit per harvest.
SQUASH transforms ordinary water into a growth-enhancing solution.

Using SQUASH increases the sugar content (Brix) of crops

Based on the test results from the joint research with OMU



Tested from May to September 2022 at OMU
Yotsuboshi is a high-sugar strawberry variety registered in 2017,developped by Japan National Agriculture and Food Research Organization (NARO)

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Using SQUASH increases the sugar content (Brix) of crops

Based on the test results from the joint reserch with OMU

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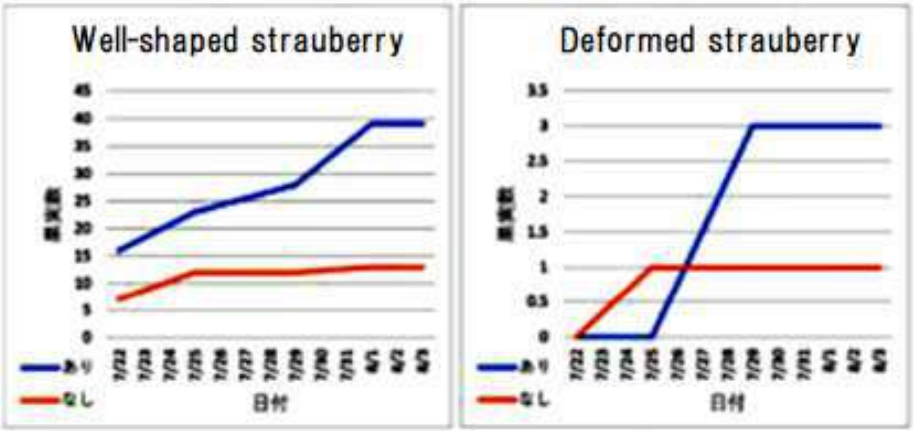
UFB Nozzle	Without by 2020	With by 2021
Total Harvest Volume	10423kg	11908kg YoY +143%
Total Harvest Volume with Brix 8 or higher	7298kg (Max.8)	8058kg (Max.12) Y oY +104%

Selected as a certified local specialty product of Izumo City as a high-sugar fruit tomato, and awarded the Bronze Prize at the 2nd National Mini Tomato Championship organized by the Japan Vegetable Sommelier Association in 2023.

Using SQUASH increases the yield of well-shaped fruits.

- In agriculture, it has traditionally been considered sufficient if microbubbles with a cumulative concentration of around 100 million bubbles per mL were supplied.
- However, experiments supplying over 200 million fine bubbles per mL revealed that both crop yield and the number of well-shaped (marketable) fruits increased

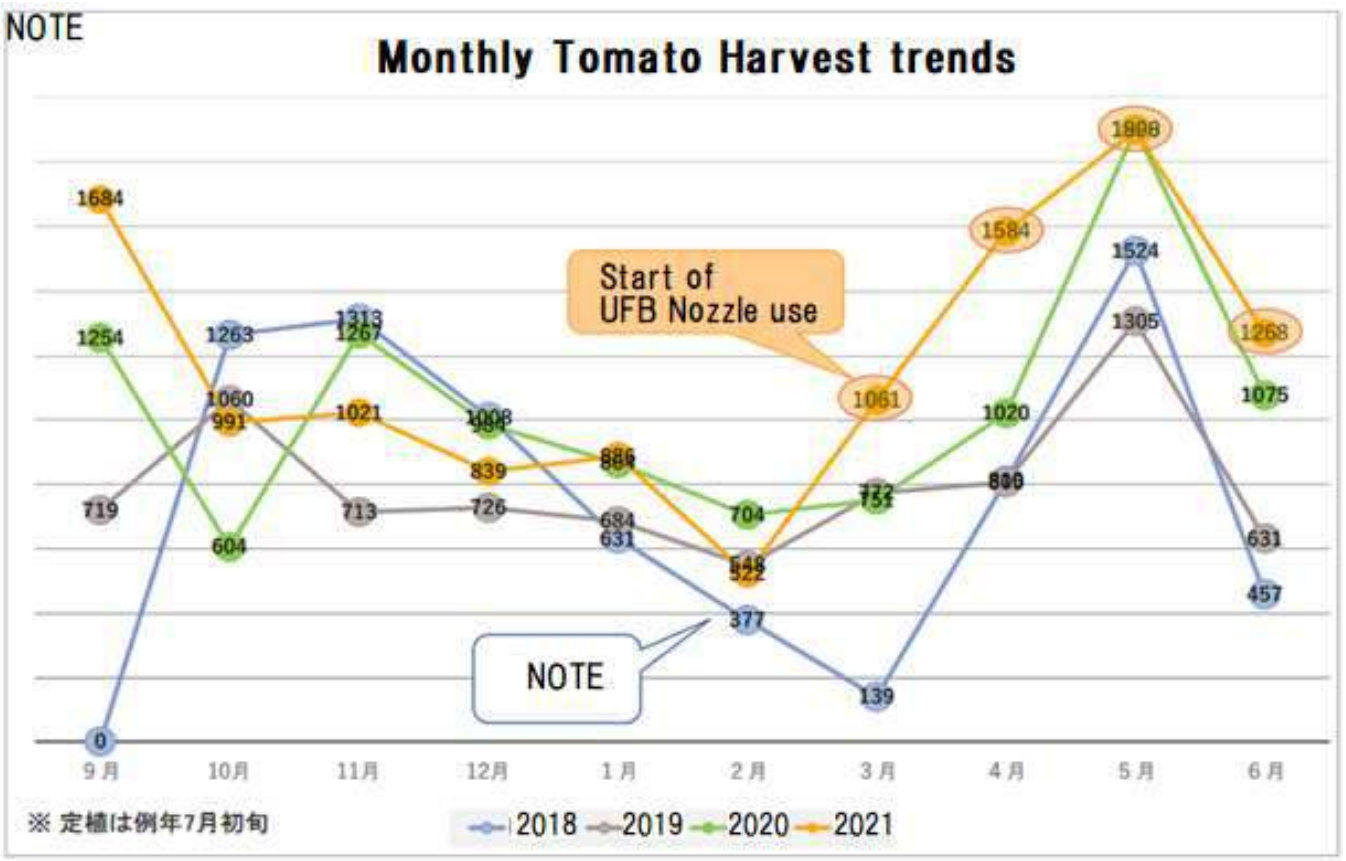
Using SQUASH increases the yield of well-shaped fruits.



UFB Nozzle	with	without
Total Harvest Q'ty	387	163
Q'ty of well-shaped	364	150
Q'ty of Deformed	23	13
Harvest ratio of well-shaped	94%	92%

The experiment was conducted under identical conditions, except for the presence or absence of the UFB nozzle.

Using SQUASH increases the yield of well-shaped fruits.



NOTE: February has the lowest harvest yield of the year due to low temperature and low solar radiation.

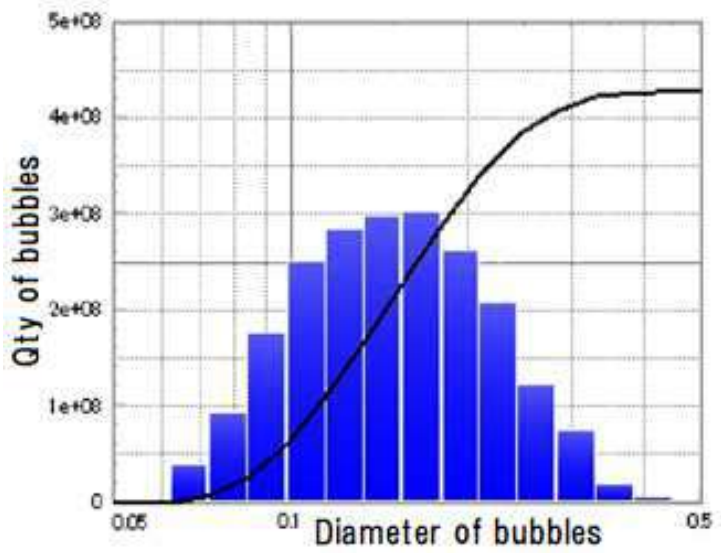
SQUASH Performance

● ApplicationsFor tap or well water.
Operating pressure: 0.2–1.0 MPa7 L/min → approx. 100 million bubbles/mL1
2 L/min → approx. 300 million bubbles/mL

● Nozzle Performance
Approx. 300 million fine bubbles/mL(avg. diameter: 150 nm) in a single pass.
Tank circulation:5 min → approx. 430 million bubbles/mL
20 min → approx. 600 million bubbles/mL

※ Fine bubbles are invisible to the naked eye.

[Right Figure] This data was measured using equipment at a Japanese public research institute under professional supervision. Measured on April 2, 2024, at the Niigata Industrial Technology Research Institute using: Shimadzu Fine Bubble Size Measurement System SALD-7500X10Single-pass measurement conditions: Tap water / Water temperature: 14° C / Flow rate: 12 L/min



SQUASH Connection

● Configuration
Direct connection to a submersible pump.
Use connectors or clamps for irrigation hoses.

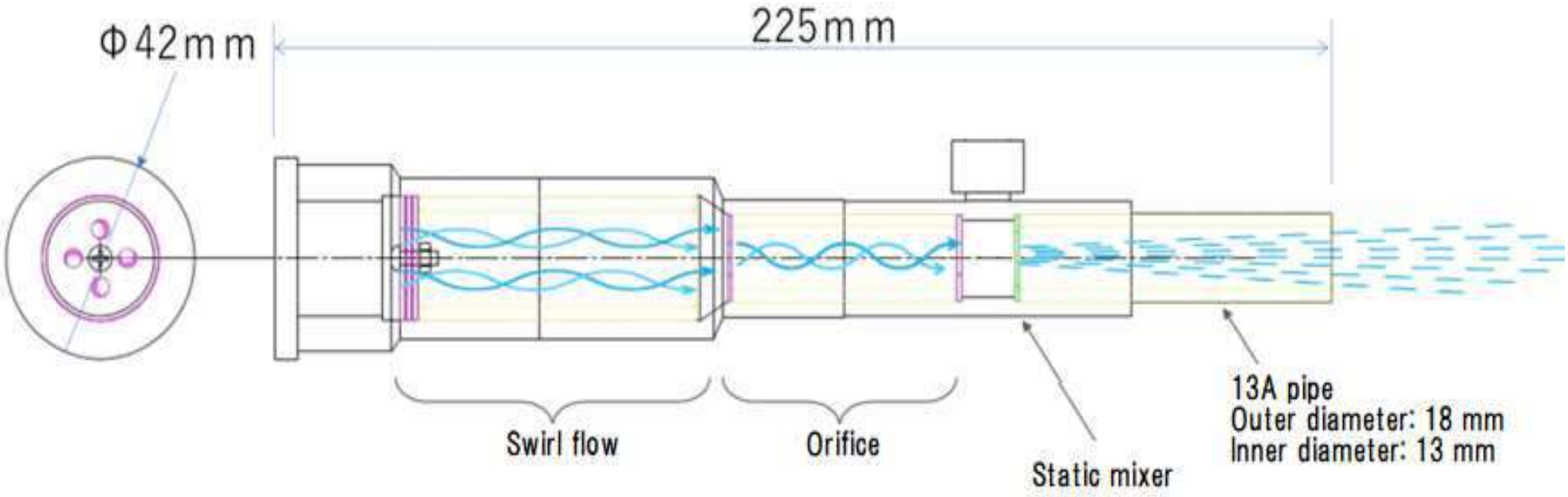

【Water Inlet】

● Installation
Connection size: 20A (G3/4")
For pumps 1 inch or larger, use a reducing socket.

● Pressure Loss
Press-fit internal structure minimizes pressure loss.
Suitable for stable operation with very low pressure reduction.

Note: The values are based on actual measurements of the difference between inlet and outlet flow rates using a Φ13 mm hose at a water temperature of 27° C. Actual pressure loss may vary depending on operating conditions.

Material and Dimensions



Unit Weight: Approx. 200 g
Wetted Materials: PVC, SUS304, SUS316, PA, C3604

※ All PVC components in contact with water are JWW-certified materials.
JWW is a certification system that verifies compliance with the technical standards defined under Japan’s Water Supply Act, including requirements for safety such as water pressure resistance and material suitability.

■Other information

Patent(Japanese)　NO.7540677
Structure capable of generating over 300 million ultra-fine bubbles in a single pass
Agricultural nozzle designed to increase sugar content, the number of well-shaped fruits, and overall yield

特 許 証
(CERTIFICATE OF PATENT)

特許第７５４０６７７号
(PATENT NUMBER)

発明の名称 (TITLE OF THE INVENTION)　微細バブル発生装置

特許権者 (PATENTEE)　大阪府八尾市本町五丁目４の１シティ八尾２０２号

株式会社ＭＲＴ

発明者 (INVENTOR)　塚本　耕也

(その他列紙記載)

出願番号 (APPLICATION NUMBER)　特願２０２４－０３８６８７

出願日 (FILING DATE)　令和　６年　３月１３日 (March 13,2024)

登録日 (REGISTRATION DATE)　令和　６年　８月１９日 (August 19,2024)

この発明は、特許するものと確定し、特許原簿に登録されたことを証する。
(THIS IS TO CERTIFY THAT THE PATENT IS REGISTERED ON THE REGISTER OF THE JAPAN PATENT OFFICE.)

令和　６年　８月１９日 (August 19,2024)

特許庁長官 (COMMISSIONER, JAPAN PATENT OFFICE)　小野洋太

Vegetable farmers using SQUASH for irrigation
Harvested radishes and eggplants (Larger than usual)

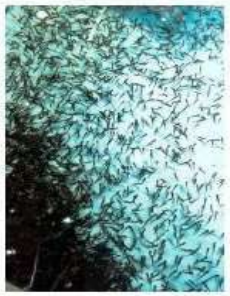
Proof that UFB are being generated from our nozzle.

- Use of seasoned boiled eggs in the shell.
- Eggshell pores (about 0.015 mm in diameter):
- Approximately 8,000–10,000 pores are open

Using our nozzle, cocktail syrup particles are reduced to about 1 μm.
With osmotic pressure, the syrup passes through egg shell pores and penetrates into the boiled egg, causing visible coloration.

Application: Aquaculture (1)

Farmed Salmon

	Without bubble treatment (conventional)	With bubble treatment
Hatching (November – February) 	Hatching rate: 80% At Water Temperature of 13℃ 	Hatching rate: 98% At Water Temperature of 13℃ 
Freshwater Aquaculture (March – November)  	Feces are decomposed. and the bottom of the tank can be clearly seen  Survival rate: 60% Most individuals remain small in size	Feces easily accumulate and require continuous cleaning  Survival rate: 92% Good growth Due to high-density breeding, fish must be divided into two tanks to prevent cannibalism

Application: Aquaculture (2)

All ornamental carp and goldfish received high evaluations at competitions.

●様本個體４

Fish raised with UFB have a larger body shape, more vivid coloration, and overall better appearance, showing superior growth.

All other growth conditions were the same, except for the presence or absence of UFB nozzle.

This is your moment to lead your market.
UFB market is just open. Early partners dominate their regions.
Change the water. Change the outcome.
Change your business.

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https://www.mrt-sensor.jp