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Smart Business Development Solutions

OK NOZZLE

WORLDWIDE PATENTED NANOBUBBLE GENERATION SOLUTION

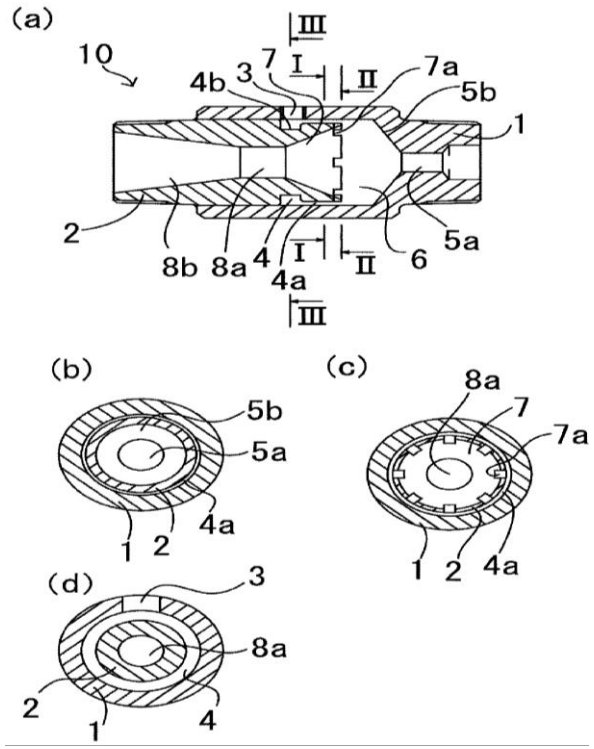
OK NOZZLE - WORLDWIDE PATENTED NANOBUBBLE GENERATION SOLUTION

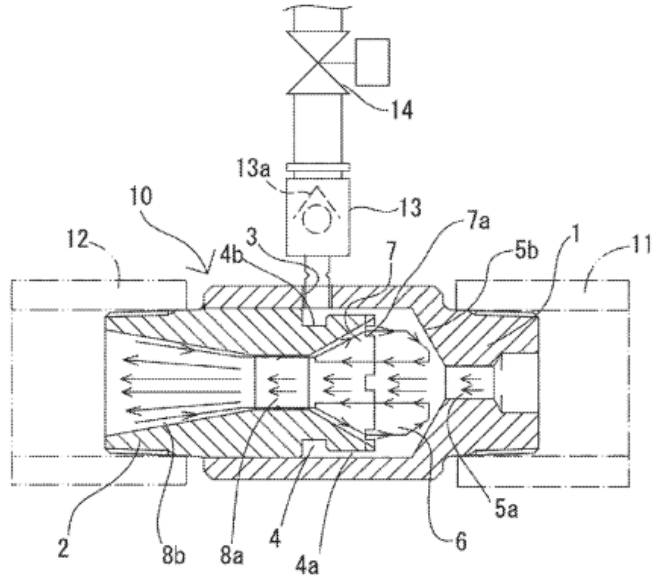
LOOP FLOW BUBBLE-GENERATING NOZZLE PATENTS

Inventors: Takeshi MATSUNAGA & Daisuke MATSUNAGA

Assignee: OK ENGINEERING CO., LTD

- ✓ **JP**: JP6167321B2 (Application Apr 11, 2014; Apr 27, 2017 – Apr 11, 2034)
- ✓ **RU**: RU2652707C1 (Apr 28, 2018)
- ✓ **US**: US9981229B2 (May 29, 2018 – May 24, 2035)
- ✓ **Canada**: CA2945460C (Sep 11, 2018 – Jan 27, 2035)
- ✓ **Austria**: AU2015245047B2 (Oct 04, 2018 – Jan 27, 2035)
- ✓ **Taiwan**: TWI653094B (Mar 11, 2019)
- ✓ **CN**: CN106132523B (Oct 01, 2019 – Jan 27, 2035)
- ✓ **South Korea**: KR102192176B1 (Dec 16, 2020)
- ✓ **EU**: EP3130395B1 (Apr 27, 2022 – Jan 27, 2035)
- ✓ **Denmark**: DK3130395T3 (Jul 25, 2022)
- ✓ **Spain**: ES2923851T3 (Oct 03, 2022 – Jan 27, 2035)
- ✓ **Australia**: AU2018217229B2 (Sep 10, 2020 – Jan 27, 2035)
- ✓ Etc.





OK NOZZLE - SIMPLE NANOBUBBLE SYSTEM WITH THE BEST DENSITY OUTPUT

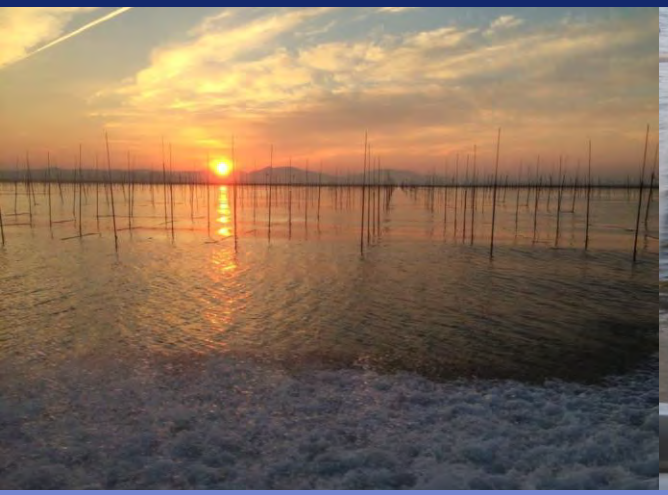



DO Transfer Efficiency (SOTE)	**>85%**
Increase in yield	**~10-60%**
Less fertilizer use	**20%**
Less water consumption	**>20%**
High efficiency, nanobubbles / ml per min	**~500**
Harvest Acceleration	

OK NOZZLE - ABLE TO WITHSTAND INDUSTRIAL APPLICATIONS AND WORK UNDER VARIOUS CONDITIONS FOR YEARS

Durable – 10+ years lifecycle

OK NOZZLE - ENGINEERING SOLUTIONS FOR THE IMPLEMENTATION OF NANOBUBBLE TECHNOLOGY

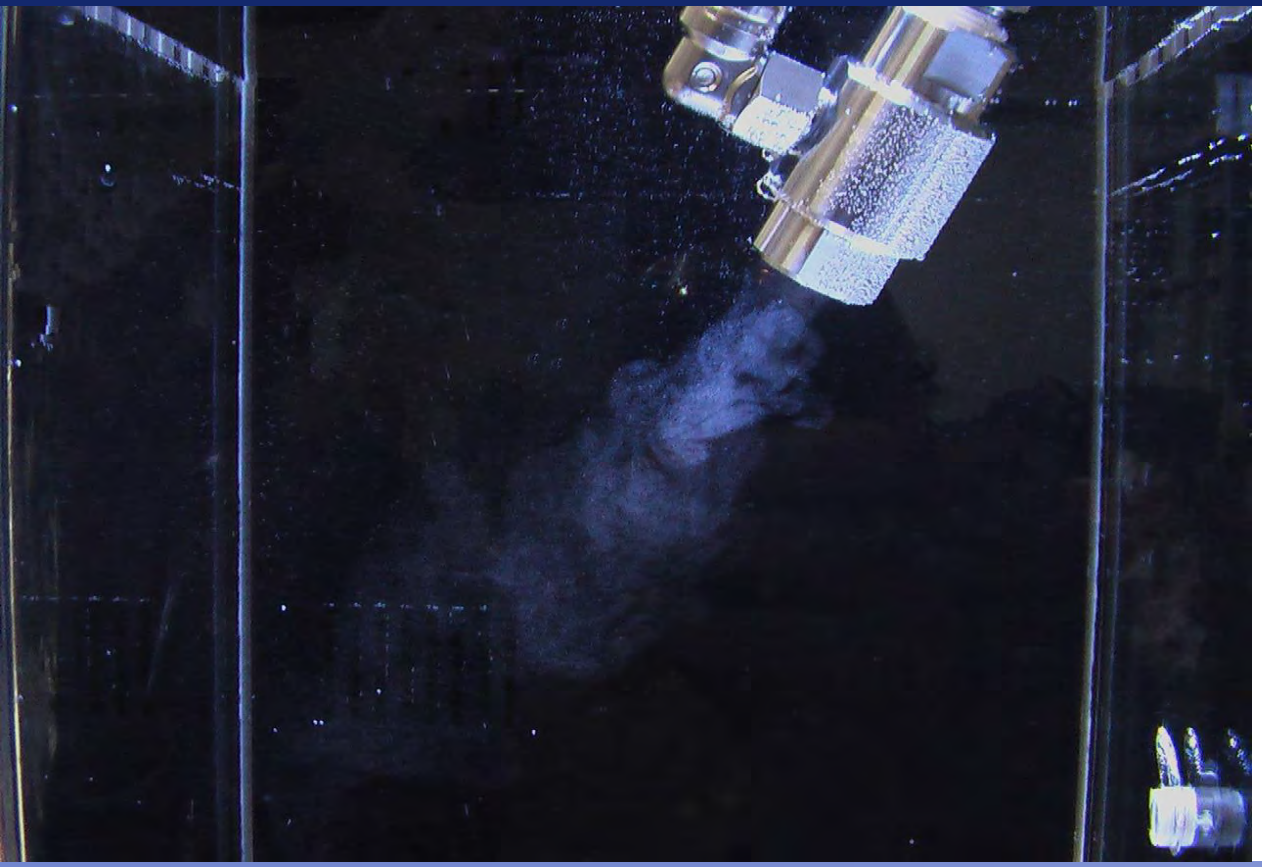


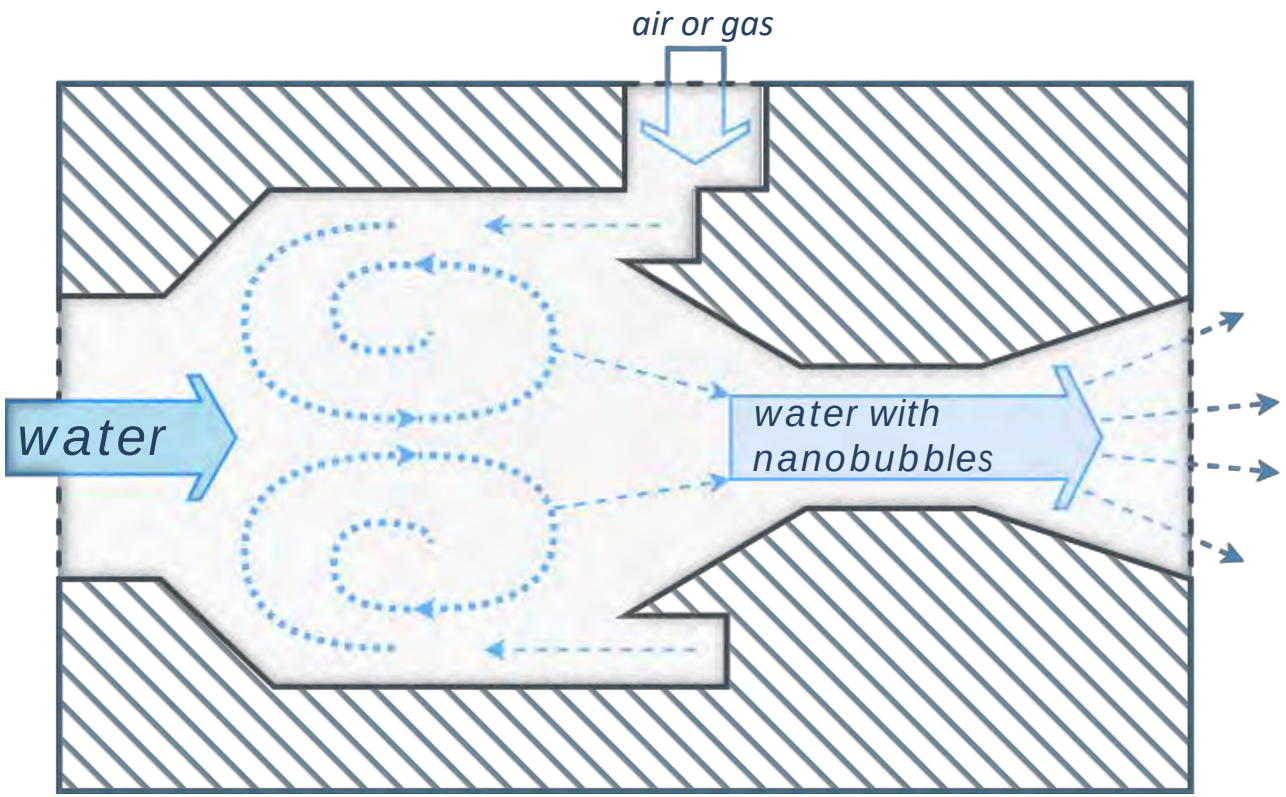

FROM METAL AND OIL MINING TO THE WASTEWATER CLEANING, FROM HORTICULTURE APPLICATIONS TO THE MEDICAL USAGE





OK NOZZLE - LOOP-FLOW NOZZLE DRAWING





MAINTENANCE-FREE AND THE MOST SIMPLE AND EFFECTIVE WAY OF STABLE NANOBUBBLE GENERATION

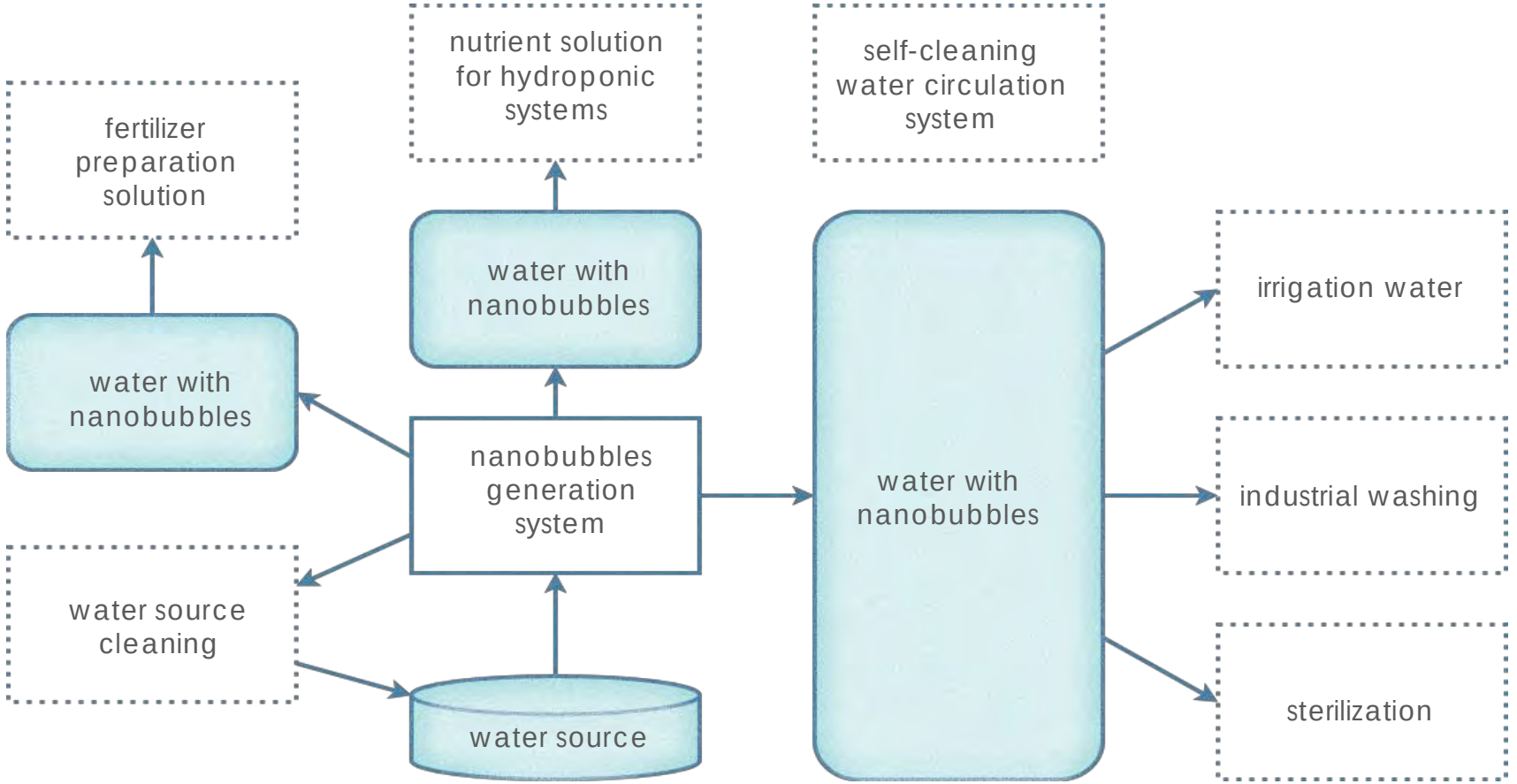
Patented principal of ultra-fine bubble (nanobubble) creation and universal calculation method allow instant adjustments in case of changed conditions, ensuring stable and permanent output of nanobubbles

Nanobubbles are **used to produce irrigation water and fertilizers for growing all kinds of crops**. From cereals, vegetables and fruits to mushrooms, flowers and decorative plants.

Increased concentration of dissolved oxygen, improved water absorption and activated processes of plants and microorganisms, **accelerating growth and increasing yields**.

Also, there is **increased resistance to plant diseases and temperature stress**.

In addition, nanobubbles are **effectively used to wash harvest** and ensure its preservation.



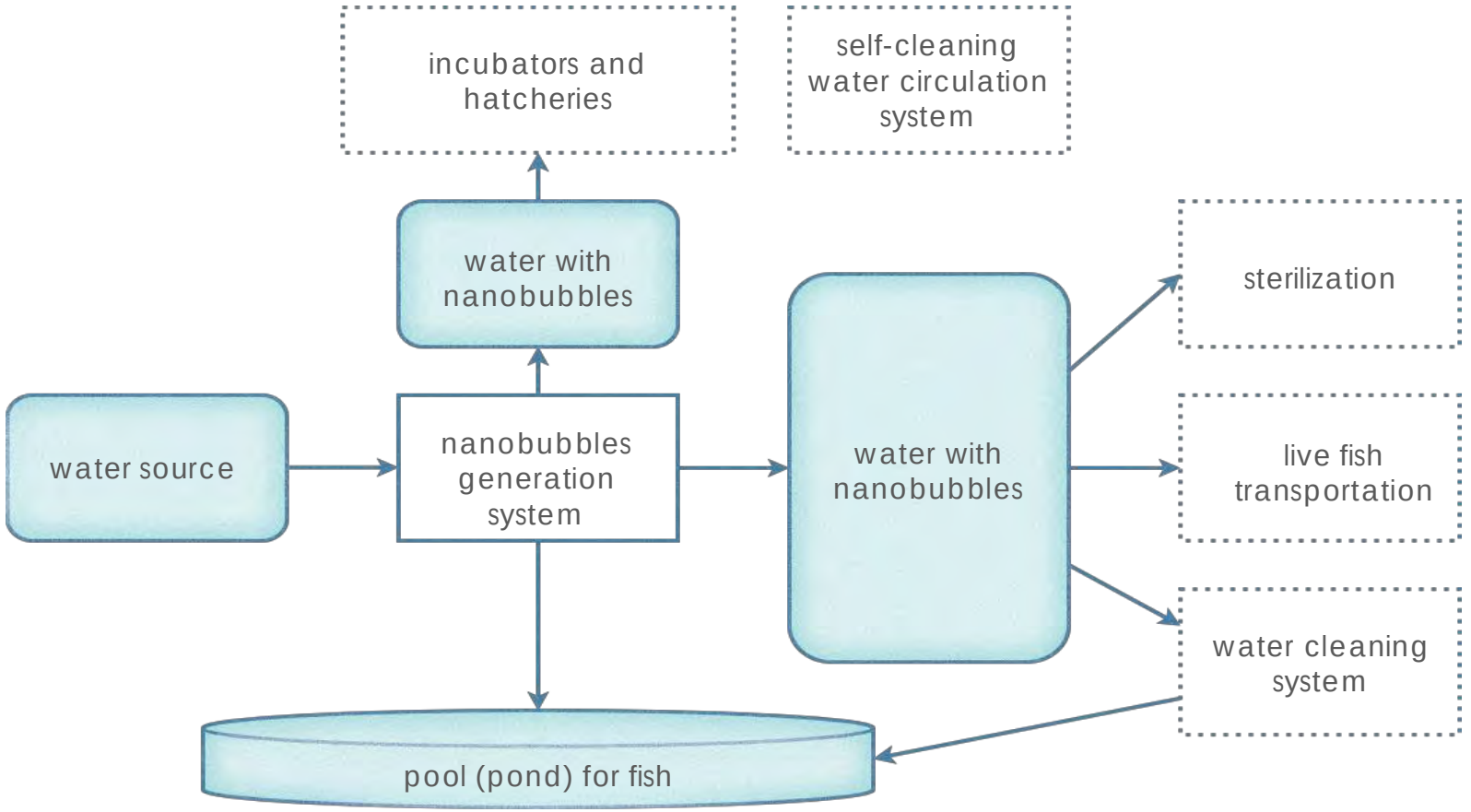
- ✓ REDUCING THE VOLUME AND PERIODS OF IRRIGATION
- ✓ INCREASING HARVESTS
- ✓ REDUCING THE GROWTH CYCLE

The stable development of aquaculture of any kind is directly related to the concentration of dissolved oxygen (DO) in water.

Unprecedented efficiency of transfer of dissolved oxygen to water-by-water saturation with nanobubbles - **more than 85% DO.**

This solves the problem of insufficient concentration of dissolved oxygen and **creates aerobic conditions in the water reservoir** in the shortest time possible.

Water is naturally purified, eliminating aquaculture by-products, unpleasant odors and harmful algae

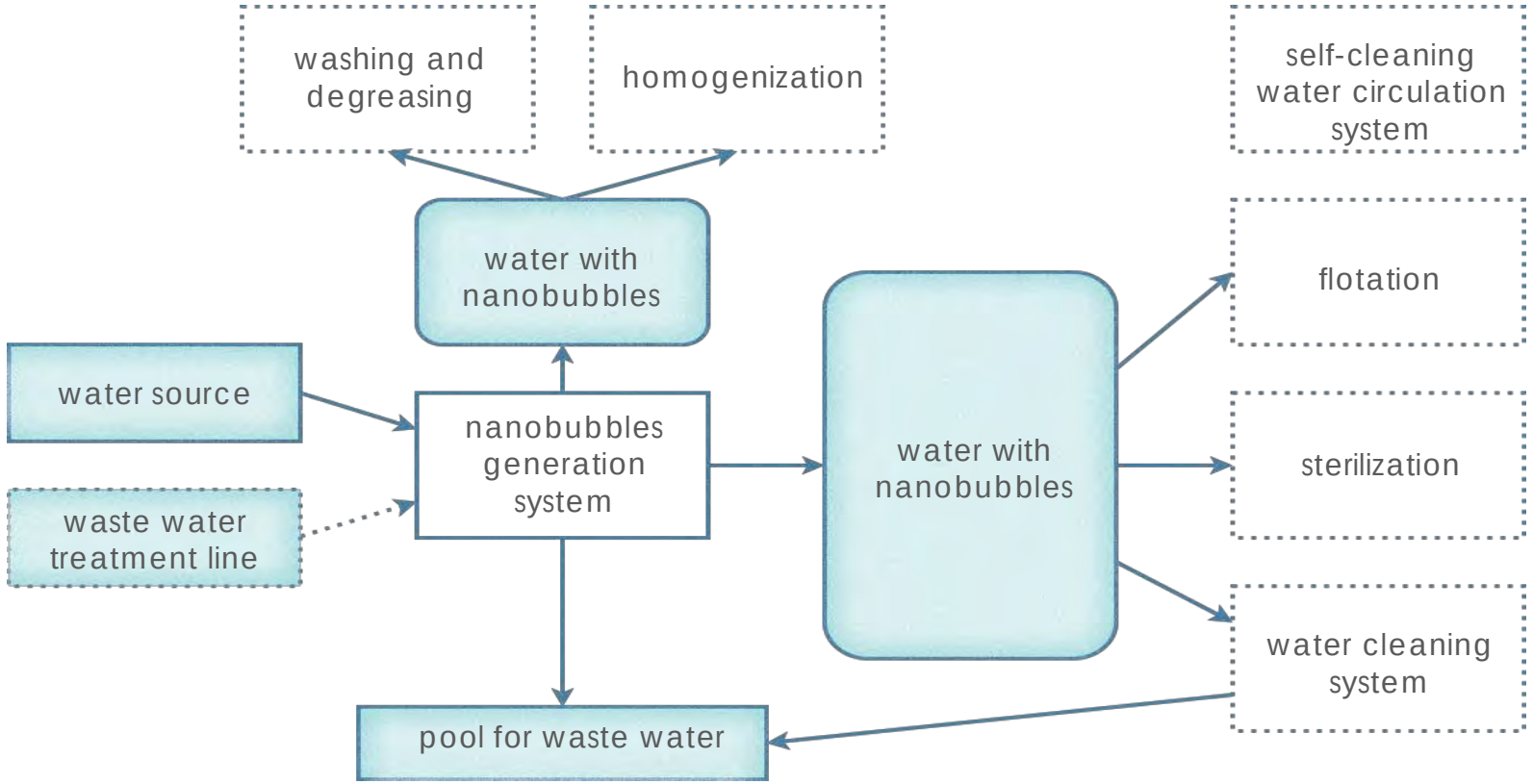


✓ CREATE CONSTANT & FAVORABLE CONDITIONS
✓ SUPPORT WATER BODY AND KEEP IT CLEAN AND HEALTHY

The high quality of cleaning is achieved by the sum of a number of effects arising from the use of Nanobubbles.

Degreasing effect, peeling effect and shock wave effect are just a few examples of such effects.

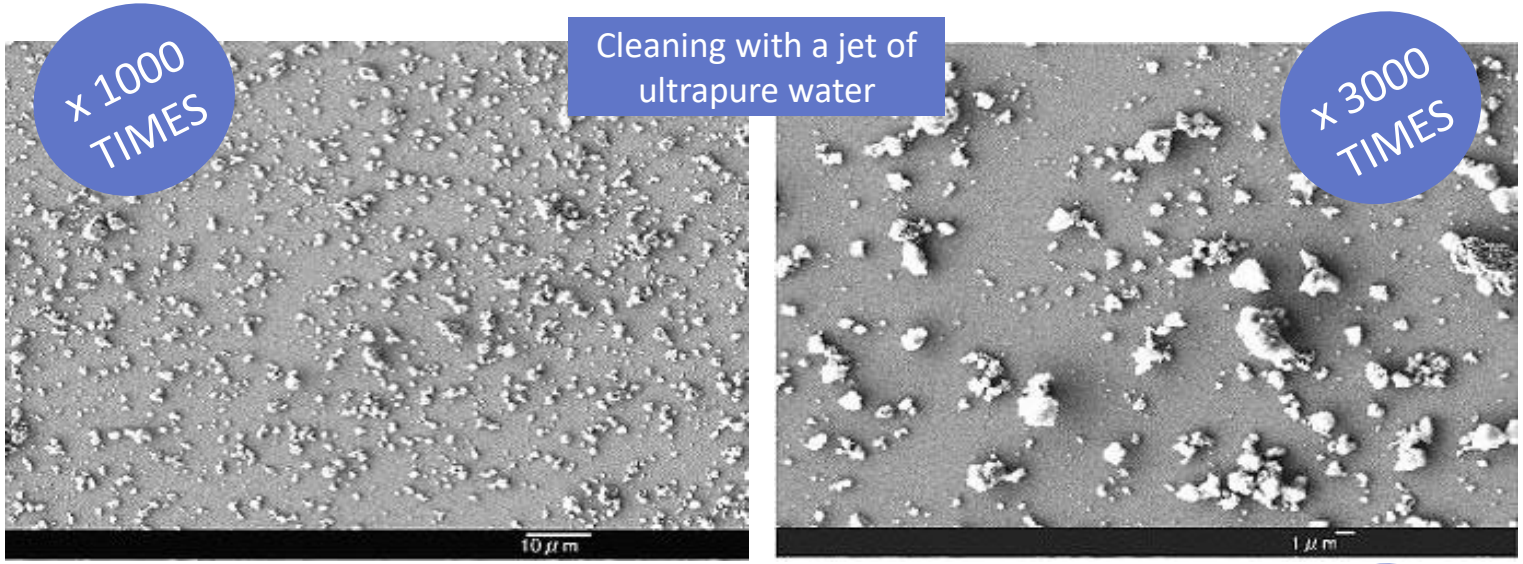
Electrically charged nanobubbles are attracted to the objects, penetrating layers of grease and dirt, and bursting, disintegrate them, destroying up to 90% of bacteria along the way.



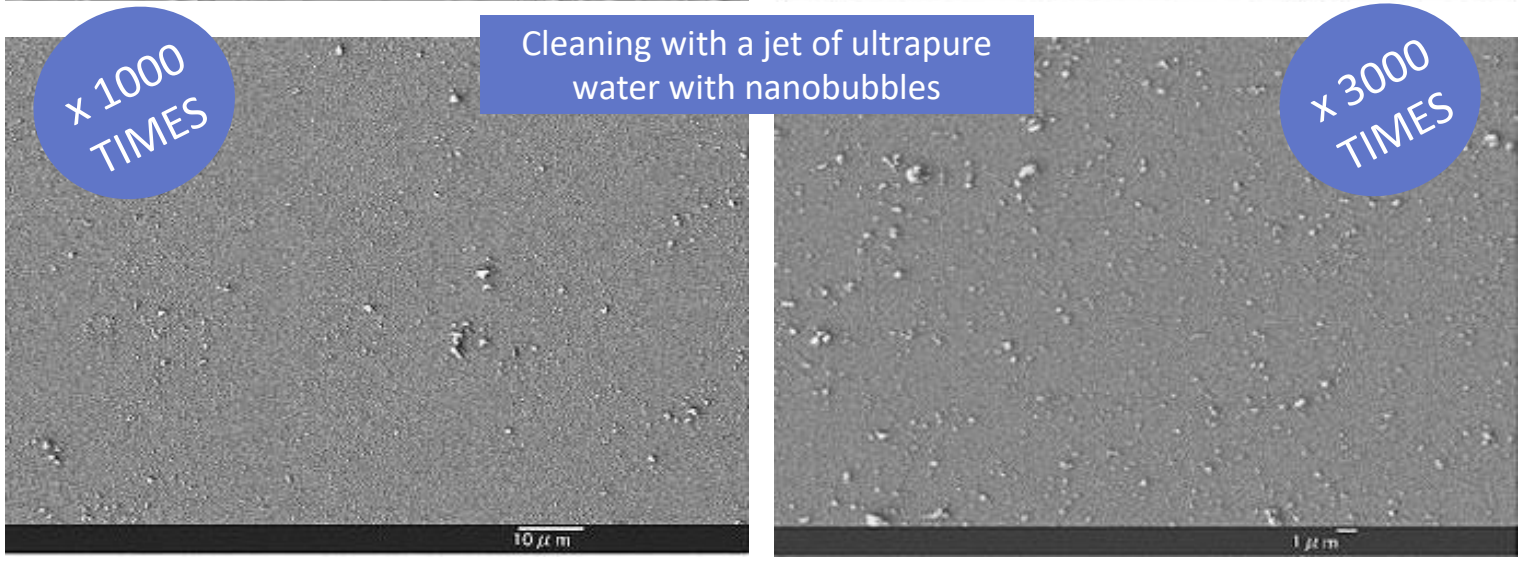
✓ SIGNIFICANTLY INCREASES THE EFFICIENCY OF PURIFICATION SYSTEMS

✓ REDUCING THE COSTS

Cleaning with a jet of ultrapure water



Cleaning with a jet of ultrapure water with nanobubbles



CLEANING OF SILICON WAFER USING ULTRAPURE WATER

The efficiency of the cleaning effect of nanobubbles has been confirmed experimentally by removal of small particles from a solid surface with high-pressure shock waves of water with ultra-fine bubbles
High pressure inside the ultra-fine bubbles gives additional force during cleaning process

Effective removal of <1mkm particles

92% of the surface has been cleared

T. Morimatsu, M. Goto, M. Kohno and A. Yabe: "Cleaning Effect of Nano-Bubbles (1st Report: Minute Particle Contamination)", Thermal Science and Engineering, Vol.12. No.4, pp.67-68 (2004)

DISCLAIMER & CONTACTS

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SCIS group is a distinguished leader in international Business Development, specializing in strategic entry strategies and implementations, corporate finance and IT outsourcing. Our accomplished team boasts over 30 years of individual expertise, having previously held key positions in BIG 4 and major corporations. With a robust track record of successful projects with top-tier companies and banks, we bring unparalleled experience to every endeavor. Headquartered in Hong Kong, SCIS ltd. extends its global reach with offices in the USA, France, UK, Czech Republic, UAE, and Japan. Elevate your business aspirations with our seasoned professionals and comprehensive services.

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