

The Market for Nanobubbles (Ultrafine bubbles): Applications, markets and companies

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Abstracts

Nanobubbles are a potential multi-billion dollar, with important implications for aquaculture, water treatment, hydroponics and agriculture sectors.

Nanobubbles or ultrafine bubbles are sub-micron gas-containing cavities in aqueous solution with unique physical characteristics that differ from other types of bubbles, and have the ability to change the normal characteristics of water. Nanobubbles can exist on surfaces (surface or interfacial NBs) and as dispersed in a liquid phase (bulk NBs). Their use can contribute greatly to sustainability challenges as environmentally friendly alternative and solutions.

Properties include:

Sterilization capability through bactericidal action.

Removal of contamination without the need for cleaning agents.

Bio-activation in cells.

Growth promotion for fish, crustacea and plants.

Cell protection.

Heat transfer capabilities to raise or lower the temperature of a liquid rapidly and effectively.

Vaporization promotion capability for water-cooled cooling towers and

evaporation based desalination systems.

Halt concrete and metal decay.

Environmental purification and remediation.

There are numerous commercial NB generators on the market for both laboratory and pilot-scales. Their use is transformative for environmental, food and wastewater treatment industries and they find application in:

Water purification/sterilization (various industries).

Cooling tower de-scaling.

Medical cleaning applications (sanitization and bacteria control).

Drug delivery.

Animal farming-drinking water enrichment (reduces bacterial growth).

Agriculture and food production (reduction in use of chemicals).

Surface cleaning treatments.

Aquaculture-oxygenation of fish and aquaculture dams.

Mining-acid water treatment.

Oil and gas Industry – oil spill clean-up and storage tanks.

Report contents include:

Introduction to nanobubbles (ultrafine bubbles).

Applications of nanobubbles (ultrafine bubbles).

Market analysis of nanobubbles in Agriculture, Horticulture, Hydroponics,

Aquaculture, Biomedical, Coolants, Food and beverage production, Mining, Oil and gas, Remediation , Surface cleaning, and Wastewater purification.

Addressable market assessment.

Market challenges and hindrances.

35 company profiles. Companies profiled include Anzai Kantetsu Co. Ltd., AquaB Nanobubble Innovations Ltd., Aquamar B.V., En Soluci?n, EnH Co., Ltd., HACK UFB Co., Ltd., Fawoo Nanotech Co., Ltd., Moleaer, Inc. and more.

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