



R0040 (2021)

# **Global report on Fine Bubble Technology: Technology, Markets, Applications**

---

This study documents the global commercial, academic and innovation activity in the area of fine bubbles technology. Global commercial and academic activity was surveyed resulting in the detailed market analysis for FBT sectors as well as national trends and developments. Sectorial and geographic trends were identified and the key players for 2020 in FBT area were identified. Some 480 entities were evaluated across 45 main jurisdictions with 19 main country markets report in detail.

# 1 Table of Contents

2	Forward.....	4
2.1	Summary.....	4
1.	Introduction.....	5
2.2	Methodology.....	5
2.	Useful definitions.....	6
3	Technology.....	7
3.1	Fundamentals.....	7
3.2	Bubble Generation.....	9
3.2.1	In-flow methods.....	9
3.2.2	Membrane-based methods.....	10
4	Key Applications.....	12
4.1	Domestic and Industrial Wastewater purification.....	12
4.1.1	Water sterilization.....	13
4.2	Agriculture and Aquaculture.....	14
4.3	Industrial Processing.....	16
4.3.1	Ultrasound Nanoparticle coating technology.....	16
4.3.2	Dissolved air floatation.....	16
4.4	Solid surface Cleaning.....	17
4.4.1	Cleaning Mechanisms.....	18
4.4.2	Disinfection Mechanisms.....	20
4.4.3	Key cleaning applications.....	20
4.5	Food Sanitation.....	25
4.6	Animal cleaning.....	26
4.7	Personal care.....	26
4.8	Environmental Applications.....	27
4.9	Air/Gas Cleaning.....	28
4.10	Bio-Medical Applications.....	28
4.11	Characterization.....	29
4.12	Transport.....	31
4.13	Food and Drink.....	33
4.13.1	Foods based on Emulsions and Foams.....	33
5	Fine Bubble Standardisation.....	34
5.1	In EU.....	35

R0040 (2021)

BREC Solutions Denis Koltsov, [denis@brec-solutions.com](mailto:denis@brec-solutions.com), [www.brec-solutions.pl](http://www.brec-solutions.pl)

6	Regulation .....	35
7	Country-specific developments .....	36
7.1	Belgium .....	39
7.2	France.....	40
7.3	Germany.....	42
7.4	Italy.....	43
7.5	Netherlands.....	45
7.6	Spain.....	46
7.7	Sweden.....	46
7.8	United Kingdom .....	48
7.9	United States of America .....	49
7.10	Canada .....	50
7.11	Oceania .....	52
7.12	Thailand.....	54
7.13	China .....	54
7.14	Russian Federation.....	56
7.15	India .....	56
7.16	South Korea.....	58
7.17	Singapore .....	60
7.18	Japan .....	62
7.19	South Africa.....	68
8	References .....	71
9	Contact.....	71