

AquaCare Flotor

Fresh Water Flotation Units



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Why flotation?



Bubble structure of an AquaCare fresh water skimmers

Compared to biological techniques flotation takes out proteins and other compounds without oxygen depletion. Depending on scale and organic load solids are taken out additionally. With this modern and economic technology all other downstream filter stages (mechanical, biological) are notably relieved. Lower investment (size of downstream filters), less running costs (flushing processes are minimized) and needed space (small size of flotation units) speaks for the integration of this technique.

Why is flotation so difficult in fresh water?



ACF3000F with pump
(modification possible)

For sea water purposes skimming technique is well-used. Because of the high surface tension of fresh water the bubble forming units used in sea water are not suitable.

On the one hand with sea water equipment like air stones, injectors (venturi) and needle wheels is not able to form small bubbles. On the other hand small bubbles will combine to large bubbles very rapidly. Large bubbles are destroying the protein foam in the upper part of a skimmer. With conventional technique the skimming process will start only at very high concentrations of floatable substances, because these substances lower the water tension.

With the help of decompression flotation it is possible to create so small bubbles that the combining of them is negligible. A two-phase-peripheral pump enriches the water at high pressure with air. The enriched water is passing a relief valve- the pressure falls down abruptly. Hereupon very micro-bubbles (30-50 μm) are created. These size is so stable, that they will adsorb organic substances. The generated surface is 10 to 20fold larger than in fresh water skimmers. So lower water flows are possible.

The principle of the skimmer

The process water is pumped by a special pump that creates the bubbles by itselfes. The air-water- mixture is injected at the lowest point of the skimmer to get the maximum of oxygen and ozone into the water. The gas-water-mixture ascents in tube. There the organic loaded foam is created.

At the bottom of the AquaCareFlotor the main tube enlarges to inhibit the bubble going out of the water outlet. The foam in the upper parts loses water and is pushed into the foam cup. With this system high amounts of organic loads will get out of process water.

Field of application

AquaCare® builds fresh water skimmers from 1 to 55 m³/h for large systems:

- show size aquaria
- water mammal tanks
- koi ponds

Aquakultursystemen:

- fish breeding
- shrimp farming

Advantages of the suspended flow principle

- extremely **long contact time** between the air and the sea water resulting in:
 - high enrichment with oxygen
 - more even pH value
 - smaller than already available skimmer
 - low running costs (only one pump for injector and water flow)
- **lowers** the numbers of free-swimming **bacteria** to about 20%
- **reduced ozone consumption** of about 70% compared to other skimmers, therefore reliable and cheap operation

Feature of the AquaCareFlotor

- reduced size
- maintenance is more easy
- *Options:* • activated carbon filter for air input • activated carbon filter for destroying ozone in the air outlet • de-aeration chamber for bubble free outlet water • flow meter for water inlet (mechanical or electronical) • cycling of the skimmer water (model "C") for extreme loaded water or for bacteria elimination • insulation (model "I") for extreme cold water systems • ORP control for automatic dosing of ozone • automatically floating control with PLC • recycling of rest ozone in exhaust air (larger than ACF 6000V)

Technical data of the AquaCareFlotors ACF 3.000F...ACF 170.000F

AquaCareFlotor size	3,000 F	6,000 F	16,000 F	30,000 F	50,000 F	70,000 F	110,000 F	170,000 F
Order number	353-030F	354-020F	354-030F	354-040F	354-050F	354-065F	354-080F	354-100F
Water flow, ca. m ³ /h	1	2	5,5	10	16,5	25	37,5	55
Air flow, ca. m ³ /h	0.04	0.08	0.22	0.40	0.66	1.0	1.5	2.2
Ozone consumption*, g/h	0.06...0.3	0.12...0.6	0.32...1.6	0.6...3.0	1.0...5.0	1.5...7.7	2.2...11.0	3.5...17.5
Total height, m	1.7	1.8	2.0	2.1	2.3	2.4	2.8	3.1
Foot print size L×W, m**	0.37 × 0.30	0.6×0.4	0.75×0.5	0.95×0.6	1.1×0.8	1.3×0.9	1.5×1.1	1.8×1.4
Diameter main tube, mm	140	200	300	400	550	650	800	1,000
Water volume, m ³	0.03	0.05	0.12	0.17	0.41	0.58	1.2	2.2
Contact time water, min	1.7	1.6	1.4	1.0	1.6	1.4	2.4	2.2
Contact time air, min	größer 10							
Material main tube	PVC transparent	PMMA (acrylic glass)		PVC transparent			PE HWST black	
Material skimmer cup	PMMA (acrylic glass)			PVC transparent			PVC transparent (PE on request)	
Material basis	PVC gray						PE HWST black	
Material flange sealing	NBR 70		Silikon 60					
Material flange screws	Polyamide (corrosion free)						Stainless steel	
Intlet skimmer	d25, DN20	d40, DN32	d50, DN40	d63, DN50	d63, DN50	d75, DN65	d90, DN80	d110, DN100
Outlet skimmer	d50, DN40	d75, DN65	d90, DN85	d125, DN110	d125, DN110	d140, DN125	d160, DN150	d200, DN180
Height of outlet, m	0.86	1.1	1.1	1.1	1.1	1.1	1.5	1.7
Drain skimmer cup	-	d20, DN15	d20, DN15	d40, DN32	d40, DN32	d40, DN32	d50, DN40	d50, DN40
Drain basis (×2)	Eheim 9/12	d20, DN15	d20, DN15	d25, DN20	d32, DN25	d40, DN32	d50, DN40	d50, DN40
Connector exhaust air	-	d25, DN20	d32, DN25	d40, DN32	d40, DN32	d50, DN40	d63, DN50	d75, DN65
Connector ozone	D10, DN8	d20, DN15	d20, DN15	d25, DN20	d25, DN20	d32, DN25	d32, DN25	d40, DN32
Numbers of flushing nozzles	-	6	8	12	14	16	18	20
Flush. water flow, 4 bar, m ³ /h	-	0.18	0.24	0.36	0.42	0.48	0.54	0.60
Connector for flushing	-	d6 PE	d10 (PE pressure tube)					
Operation temperature	2...35°C							
Weight empty in kg		45	52	95	130	180	260	430
Weight operation in t		0.1	0.17	0.27	0.44	0.76	1.46	2.63
Suitable pump	PBU201E10		LBU403C120L			LBU603C160L	LBU603E162L	
Connection of pump	¾" female		DN65-DN40			DN80-DN65		
Water touched material of pump	1.4581, 1.4517, 1.4462		EN-GJL-250, CuSn12-G, 1.4057					
Electrical connection, kW	400V, 50 Hz							
Connected power	1.5		4			11	18,5	
Weight of pump	22							

The chosen size depends on many factors, e.g. the stocking, food input, temperature, additional technique like biofilters, UV lamps, ozone input and the wished water quality. If you are not sure what size is the best for your systems please contact AquaCare

* The ozone needs is extremely depending on the organic load. ** It is possible to fix the pump onto the basis plate.