

Protein Skimmer

INNOPURE



FOAM FRACTIONATION, REMOVAL, FILTRATION, DEGASSING, AERATION, CIRCULATION


acqua & co®

SKIMMY



MODELS	Water flow mc/h	Air flow mc/h	Aerator power HP	Overall dimensions AxBxH cm	Unit weight kg	Water volume l
SKIMMY 0,5	30	17	0,5	111x80x174h	97	(340)
SKIMMY 1	50	24	1,0	111x80x174h	97	(340)

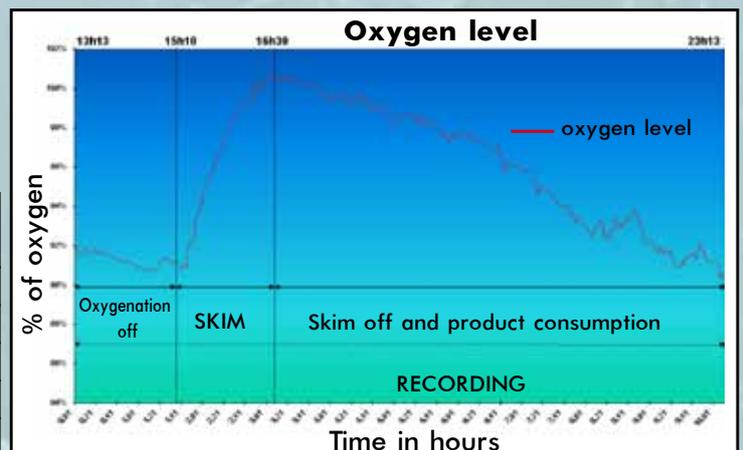
SKIM

- Centrifugal liquefier
- Highest SAE; SOTR; AAE
- Huge water flow
- Strong turbulence
- Longest retention time
- Break up water flow in cyclonic counter current

- Bod reduction
- Cod reduction
- Ph stabilization



MODELS	Water flow mc/h	Air flow mc/h	Aerator power HP	Overall dimensions AxBxH cm	Unit weight kg	Water volume l
SKIM 80	70	35	1,0	112x146x205h	97	(785)
SKIM 100	100	45	1,5	112x146x205h	98	(785)
SKIM 150	150	27	1,7	112x146x205h	98	(785)
SKIM PLUS	100	45	1,5	112x146x220h	98	(785)



Oxygen is mixed by pressure, turbulence and water flow

INTRODUCTION TO THE SKIM

Skim is the turning to a new technology and innovative technique in water treatment. It simply works by injection of micro-bubbles under pressure.

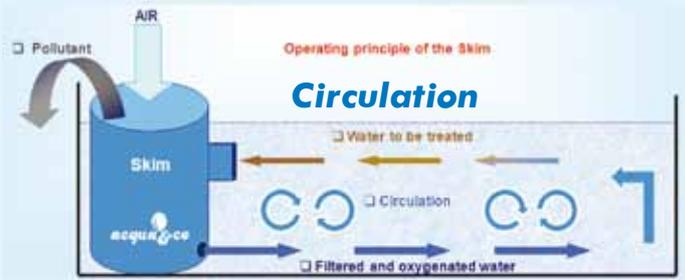
Atmospheric air is injected to filtrate and provide gaseous exchange air-water (water oxygenation).

The most important feature is related to its filtration capability on macro particles, dissolved matter and microscopical organic and inorganic matter.

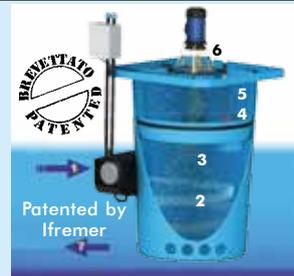
"The air skimmer" development IFREMER confirms a water treatment capacity of 100 cubic meters per hour.

Filtration, oxygenation and circulation are the synchronized and coordinated functions of the SKIM for the water treatment.

The system is placed directly in the pond or inside other water stocking facilities of water to be treated. This feature offers an easy installation and operation (closed circuit in the pond itself).



HOW SKIM WORKS



- 1 Hydro-injector water and micro bubbles
- 2 Oxygenation-Aeration-Degassing
- 3 Formation solid foam
- 4 Waste liquid extraction pump
- 5 Liquid foam collection chamber
- 6 Formation liquid foam
- 7 Circulation: filtered and oxygenated water

The foam produced is directed to a reaction chamber, is liquefied and is evacuated far from the pond by pumping.

The water, well filtered and oxygenated, goes out of the system circulating through the pond. The foam mounts through an adjustable chimney and falls into the condensation cupel. This accumulated foam is condensed and liquefied. When reaching the level, the liquid foam clicks on the switch to start the extraction pump to evacuate the condensate.

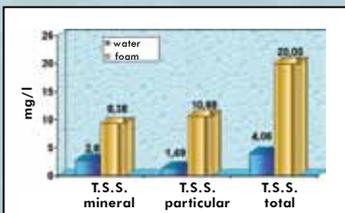
FOAM FRACTIONATION. High volumes of foam produced through our **Innopure** line. Also called flotation or protein skimming. It is the process to **REMOVE** from water organic substances or tiny solid particles.

An efficient **AERATION** reduces oxygen biological demand by direct **removal** of proteins as well as bacteria found in the Water column. The injection of big volume of air in the water physically create the gas interchange condition.

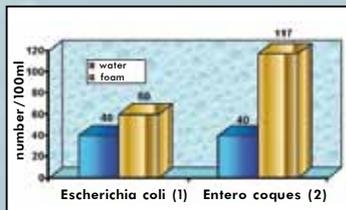
A huge amount of air is self injected under pressure in form of micronized bubbles for highest oxygen transfer rate, CO₂ stripping and ammonia removal. As a **DEGASSING** tower the mass transfer of gas at the interface of the water air, **removes** the acid forming carbon dioxide.



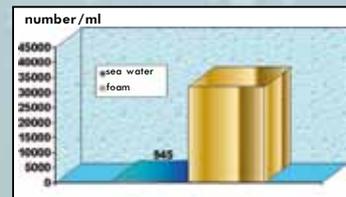
TEST RESULTS



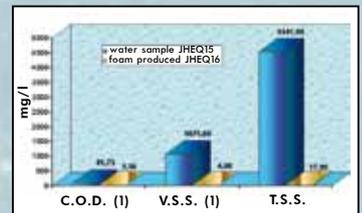
Concentration of suspended material in the water and in the foam in the test at sea bass hatchery



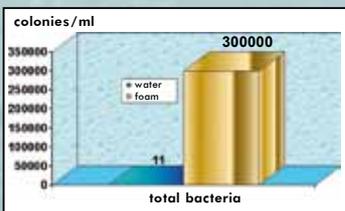
Concentration of total bacteria in the water and in the foam at sea bass hatchery with Skim



Concentration of Escherichia coli.



Comparison of the concentration of the material in the water of a fish farm and in the condensate of the foam produced.

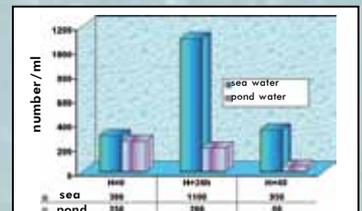


Concentration of total bacteria in the water and in the foam at sea bass hatchery with Skim

PARAMETERS	Particular matter		COD	Dissolved matter			Bacteria	Foam
	TSS	VSS		NH ₄	PO ₄	SiO ₄		
OYSTER CULTURE	181	72	21	56	52	76	84.10 ⁹	209
FISH CULTURE	13755	2973	18	95	706	2941	172.10 ⁹	319
UNITS	Grams per day						Number/day	Liter/day

TSS: Total suspended solid
VSS: Volatile suspended solid
Bacteria: total aerobic flora at 22°C

COD: Dissolved organic carbon
NH₄: Total ammonia nitrogen
PO₄: Phosphate g P/24H
SiO₂: Silicates g SI/24H



Comparison of the Alexandrium between the sea and a purification station of 600 cubic meters operating with a Skim.

Ras: recirculation aquaculture systems and aquariums



Crustacean : live holding systems



Shellfish: live holding, purging and depuration systems



SKIM Plus



BREVETTATO
PATENTED



Skim Plus is a filtration control system by automatic foam adjustment.

Skim Plus is the Skim up graded automatization operated.

A PLC system installed in the main control box automatically set filtration and foaming. Specific oleo-dynamic actuators lift or lower the foaming **separation chamber** .

Skim plus authomatic setting offers manual setting or controlled setting.

On the manual setting the USER can lift or lower the **separation chamber** from main control box through the dedicated switches.

On the authomatic setting the **separation chamber** is lifted or lowered by the PLC according to required filtration on monitoring and reading the quantity of foam collected in a certain lapse of time.

