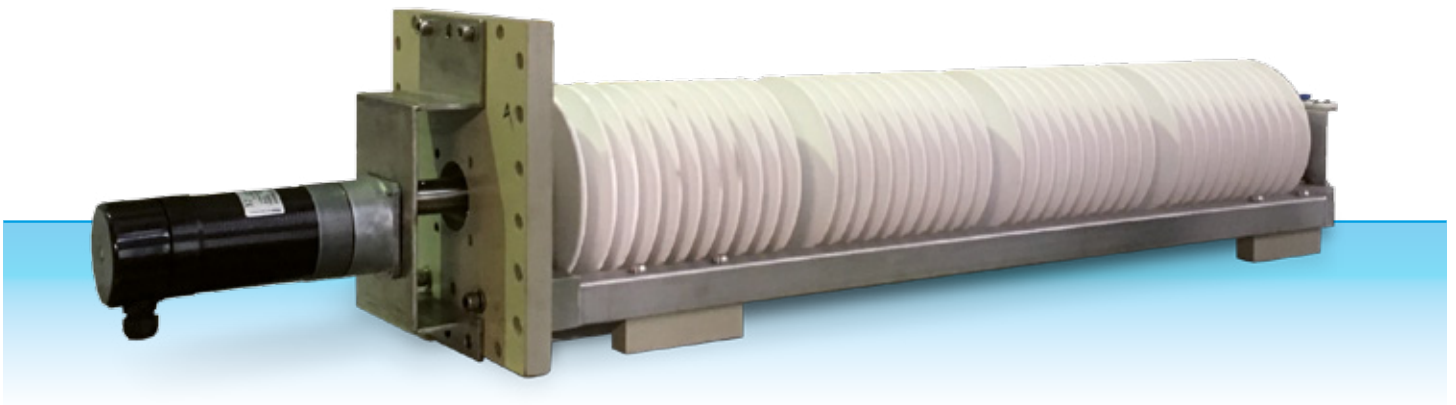


MicroGas™ Bubble Generator



The patented **MicroGas™** Bubble Generator is the most cost-efficient and robust flotation device to maximize the removal of suspended solids and Fat, Oil & Grease (FOG) regardless of pH, temperature or salinity. Originally designed as a minimal-equipment, low-OpEx alternative to DAF, the **MicroGas™** Bubble Generator has many applications including water and wastewater treatment, chemical reactors and aquaculture.

Its novel technology is based on ceramic diffuser discs mounted on a rotating shaft. Compressed air/gas is injected at 1-2 bar into the shaft and permeates through the diffusers into the liquid, where a cloud of fine bubbles between 50-70 micron is generated (white water) with an extremely low energy consumption. Unlike in DAF systems, no pressure is required to dissolve the gas into the liquid, and hence energy consumption is not reliant on salinity and temperature of the water. Furthermore, flotation systems based on **MicroGas™** do not require saturation vessel, recycle pumps or nozzles, making them more reliable and cost-effective.

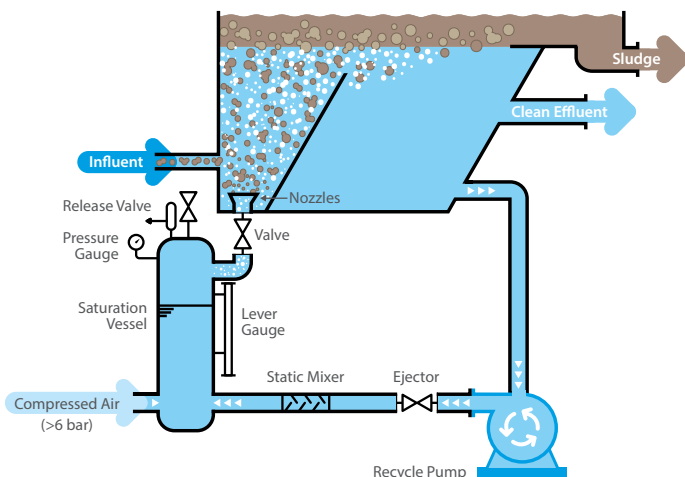
FEATURES

- Bubble Size 50-70 micron
- Energy consumption < 0,05 kWh/m³
- OpEx independent from salinity, temperature and pH.
- Plug & Play / Easy installation
- Self-cleaning / No clogging due to solids
- Minimal equipment
- Use of any Gas
- Adjustable size and amount of bubbles (air-to-solids ratios)
- Robust to extreme environments (corrosive, thermal and chemical).
- Treat flow rates from 1 to 100 m³/h

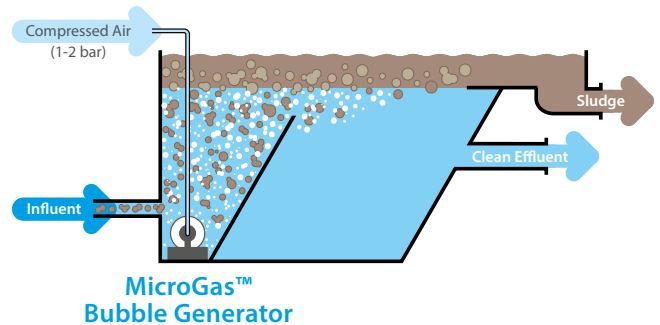
APPLICATIONS

- DAF / Clarifier retrofits
- Water treatment (TSS and FOG removal)
- Ozonation / Oxidation
- MBRs / SBRs
- Algae harvesting
- Tramp oil removal from metalworking fluids
- Hydroponics and marine farming
- Bubble column reactors

Conventional DAF system



With MicroGas™



- Lower OpEx
- Less equipment
- No Clogging

Specifications	MicroGas™ 120	MicroGas™ 240	MicroGas™ 480
WATER			
Treatable flow rate per unit* [m³/h]	1,5-3	3-6	7-12
Temperature** [°C]	5-60		
pH [-]	2-13		
GAS			
Flotation gas	air, nitrogen, methane, oxygen, ozone, carbon dioxide, hydrogen		
Flow rate [NI/min]	1,2-1,6	3-4	6-8
Inlet pressure*** [bar]	1-2		
Quality	ISO 85731 - 1 : 2010 [5:4:3]		
CONNECTIONS			
Gas inlet	12 mm PU tube		
Motor (DC) [kW]	0,06	0,06	0,06
DIMENSIONS & WEIGHT			
LxWxH (overall) [mm]	250x700x315	250x900x315	250x1100x315
LxWxH (submerged part) [mm] (minimum tank dimensions)	250x400x315	250x600x315	250x800x315
Weight [kg]	17	20	24

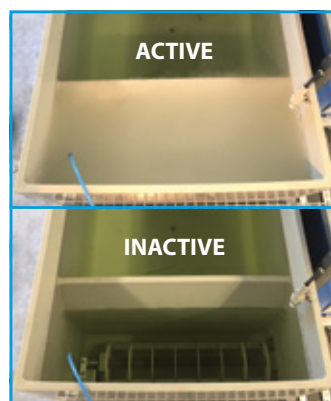
* Higher flow rates achievable by increasing the number of units

** Higher temperatures upon request

*** Depending on tank depth



DAF retrofitted with MicroGas™



Microbubbles generated by MicroGas™ (white water)

ABOUT THE COMPANY

akvola Technologies is a German water technology company that provides cost-effective and environment-friendly solutions based on **MicroGas™** and **akvoFloat™** – a proprietary flotation-filtration process – to clean hard-to-treat industrial wastewater containing high concentrations of oil (free and emulsified) and suspended solids.

These solutions can be implemented in major water-using industries: Oil & Gas, Refining & Petrochemicals, Automotive & Metalworking and Steel & Aluminium.

Proven Technology. Proven Expertise.