

DISSOLVED AIR FLOTATION UNITS [DAF]

PWL Series

DAF is a gravity separation process whereby the separation of two phases is achieved by increasing the specific gravity difference of the two phases. This is achieved by attaching micro air bubbles, brought about by saturating water with air under pressure, and then expanding the water stream through valves to atmospheric pressure. These micro bubbles nucleate onto the solid particles to be separated, thus lowering the specific gravity and allowing contaminants to rise to the surface.

Suspended solids, grease and oil are very efficiently removed by DAF, and a combination of screening and DAF results in BOD/COD removals upto 60% depending on the application.

However, a combination of flocculation and floatation can result in BOD removals of around 80-90%.

For waste water containing high solids content, it is necessary to create a sufficient retention time for prewatering of the skimming.

The PWL Series Flotation Unit have been designed for capacities upto 200 m³/hr. (as standard). Higher capacities are realized by combining or expanding systems. Standard construction is in carbon steel, but other materials is possible. DAF systems in concrete are also possible.

Saturation of air in water can be carried out by dosing air in the suction side of the aeration pump. Dissolution takes place by Henry's law, and the turbulence and energy in the pump provide excellent conditions for this process.

Alternately, use can be made of a saturation vessel, of conventional design, for the air to dissolve in the water. The recycle flow is mixed with the wastewater in the flotation unit, through a pressure pipe. Air bubbles formed adhere to the particles and give them buoyancy to float rapidly to the surface.

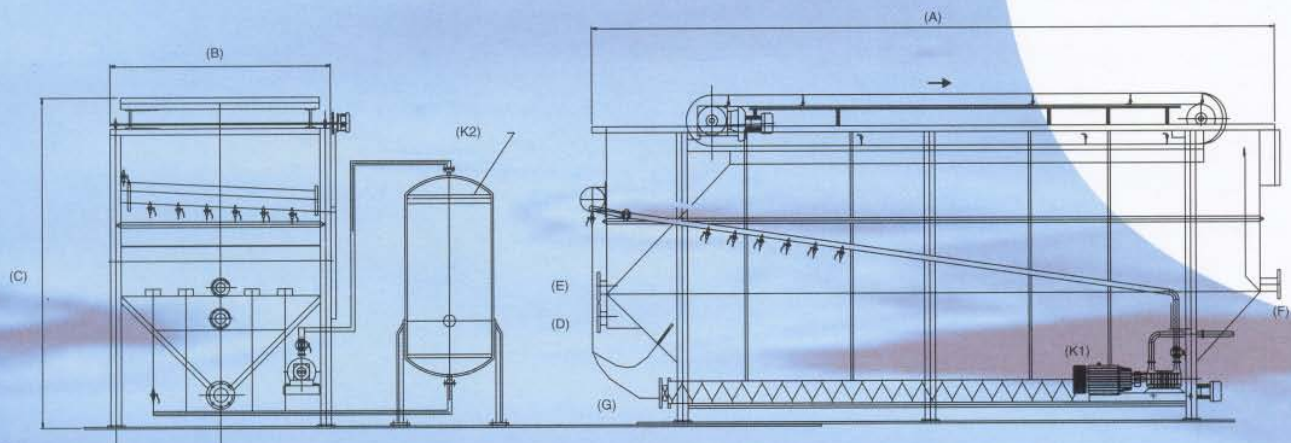
These systems do not use plate packs, and are open tank, low unit separator, with aeration points in the inlet as well as the sides of the tank to ensure excellent aeration along the entire tank length.



PWL

To ensure high dry solids contents of the skimmings, the solids loading (kg solids/m² free unit surface) is an important design factor. For wastewaters containing high solid contents, it is necessary to create sufficient retention time for predewatering of the skimmings. The PWL flotation systems have been designed for nominal capacities with solids contents up to 10.000 mg/l.

TYPE	PWL	5	10	15	20	25	30	40	50	60	70	80	90	100	120	140	160	180
Capacity	m ³ /hr	5	10	15	20	25	30	40	50	60	70	80	90	100	120	140	160	180
Free Surface	m ²	1,25	2,5	3,75	5	6,25	7,5	10	12,5	15	17,5	20	22,5	25	30	35	40	45
Dimensions	PWL	5	10	15	20	25	30	40	50	60	70	80	90	100	120	140	160	180
A - Length	mm	2100	2700	3200	3200	3600	4300	5500	6600	7800	8900	10100	11300	9300	11000	12800	14300	16000
B - Width	mm	1200	1700	1700	2400	2400	2400	2400	2400	2400	2400	2400	2400	3200	3200	3200	3200	3200
C - Height	mm	1400	1500	1800	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400	2400
D - Inlet	DN/NW	50	65	80	80	100	100	100	150	150	150	150	150	200	200	200	250	300
E - Skimmings	DN/NW	65	80	100	100	100	150	150	150	150	150	150	150	150	200	200	200	200
F - Effluent	DN/NW	65	80	100	100	100	150	150	150	200	200	200	200	250	250	250	300	300
G - Sediment	DN/NW	65	80	80	80	100	100	100	125	125	125	125	150	150	150	150	150	150



- The aeration systems can be either executed with:
 - a multistage side channel pump -> K1
 - air saturation vessel (K2)
- The sludge collection compartment is optional and can be replaced by:
 - a discharge chute
 - a spiral conveyor discharge for heavy sludges

Features:

- Very compact modular construction;
- Maximum pollution load reduction;
- High dry solids content of separating materials;
- Easy operation;
- Low maintenance costs;
- Easy to expand to larger capacities;
- Extremely competitive to comparable processes.

Applications:

- Poultry processing, meat processing and packing;
- Fish processing;
- Mining industry;
- Petro-chemical industry;
- Pulp and paper industries;
- Textile industry;
- Tanneries, other industries.